

Refrigeration Supply Wholesalers Form Association and Draft Constitution

(Concluded from Page 1, Column 3)
tion, the following suggestions were outlined, to be made to manufacturers:

1. Manufacturers not to sell direct to the trade, writing to the manufacturer direct, where there is a jobber connection.
2. Manufacturers to do what they can to eliminate small manufacturers, who buy on manufacturing schedule, from selling as jobbers to the trade.
3. Manufacturers not to allow factory representatives to solicit business from the trade in the territory where there is a jobber connection.
4. Manufacturers to set jobbers up on maximum discount basis, regardless of quantity.
5. No master jobbing set-up to be made to cover national distribution of manufacturer's product, to be resold to the local jobber.

As an aftermath of these suggestions, J. S. Forbes, Kerotest Mfg. Co., was present at Thursday afternoon's meeting, to represent manufacturers interested in cooperating with jobbers for the advancement of mutual interests. Mr. Forbes presented to the meeting the manufacturers' suggestion as to the definition of the term, "jobber" (see story on parts manufacturers' meeting for text of definition).

Meanwhile, the jobbers had enlarged their own definition of the jobbing trade to mean:

A person, company, or corporation

(a) Purchasing at distributors' prices from manufacturer.

(b) Reselling or distributing products to the trade only (small manufacturers, distributors and dealers, and service and installation companies).

(c) Carrying sufficient stock on hand to adequately and efficiently serve the trade in a particular territory.

(d) Jobbing the products of not less than five (5) representative manufacturers.

(e) Completely divorced from service or installation work other than reconditioning equipment direct for the trade.

While opinions voiced at the meeting indicated a preference for the definition submitted by manufacturers, the minutes do not show that any definite choice was made at that time.

Discussion Thursday, after the constitution had been read and approved, was concerned mostly with the problem of getting manufacturers to recognize members of the new association, and refuse to sell merchandise at wholesale to firms or persons who were not accredited members of the group.

It was explained that efforts will be made to incorporate all reputable firms which qualify as jobbers into the association as soon as possible.

Mr. Forbes, speaking for manufacturers, said that manufacturers would expect to continue dealing, at present, with some firms which do not strictly qualify as jobbers, since an extensive change in merchandising policy could not be made immediately. Later, he said, the lines may be drawn tighter.

He added that whatever he said must be construed as expressing the viewpoint of only those manufacturers in the association, and not the parts manufacturing industry as a whole.

Repeating for jobbers, Mr. McCloud emphasized that the suggestions, reported above, which his committee had made to manufacturers, were in no sense an attempt to dictate to manufacturers how they should operate their business. It was rather, he said, an attempt to outline to them a few conditions which could be improved, to the betterment of the jobbing trade as a whole.

Jobbers realized, he added, that manufacturers could not do everything that was asked of them, but the association liked to feel that the manufacturers would be willing to cooperate with it in working out any plan that might help to straighten things out.

Jobbers Present

Airo Supply Co.,
410 Wells St., Chicago, Ill.
C. E. Hamilton,
M. W. McManus,
A. W. Seydell,
W. J. Sorensen.
The Harry Alter Co., Chicago, Ill.
Irving C. Alter.
Atmospheric Control Co.,
716 Marquette Bldg., Detroit, Mich.
Geo. Nutting.
B-Line Refrigerator Parts,
8038 S. Racine Ave., Chicago, Ill.
Stanley Harris.
Baumgardner Dist. Co., Toledo, Ohio.
C. W. Kamm.
E. J. Becker Co.,
2832 E. Grand Blvd., Detroit, Mich.
Andrew Koells.
H. W. Blythe Co.,
2334 S. Michigan Ave., Chicago, Ill.
H. W. Blythe.
Burststein-Applebee Co.,
1012 McGee St., Kansas City, Mo.
M. W. Applebee.

Debes & Co.,
1249 E. 105th St., Cleveland, Ohio
Karl L. Debes,
Harry J. Pottinger.

Henry V. Dick & Co.,
514 Oates St., Charlotte, N. C.
Henry V. Dick.
W. C. Du Comb Co., Inc.,
6335 Palmer Ave. E., Detroit, Mich.
W. C. Du Comb,
M. J. Laurie.

Federal Refrigerator Corp.,
New York, N. Y.

A. Ivan Brickner.
J. Geo. Fischer & Son, Inc.,
Saginaw, Mich.
Ray Fischer,
W. J. Culver,
G. E. Osborn.

Forshund Pump & Machinery Co.,
3031 Main St., Kansas City, Mo.
Lloyd H. Roberts.
Home Appliance Service Co.,
Greensboro, N. C.

W. H. Parker.
J. J. Koepsell Co.,
Sheboygan and Milwaukee, Wis.
E. Anderson,
Loyal Kohn.

Langsenkamp Co., Indianapolis, Ind.
Frank Langsenkamp, Jr.,
J. A. Cassidy.

Lewis Supply Co., Memphis, Tenn.
Howell E. Adams.

D. C. Lingo Co.,
306 M & M Bldg., Houston, Texas
D. C. Lingo.

Merkel Bros. Co., Cincinnati, Ohio
Henry W. Merkel.

George Monjian Co.,
360 E. Grand Ave., Chicago, Ill.
George Monjian.

J. M. Oberc, Inc.,
1203 Stanley, Detroit, Mich.
J. M. Oberc,
E. H. Davey.

Paramount Electrical Supply Co., Inc.,
43 Warren St., New York, N. Y.
Fred C. Swanson,
Chas. A. Kabat.

C. L. Percival Co., Des Moines, Iowa
Worth H. Percival.

R.S.D. Distributors,
401 S. First St., Richmond, Ind.
M. F. Stutzman.

Refrigeration Economics Co., Canton
F. M. Bennett.

Refrigeration Equipment & Supply Co.,
5733 W. Chicago Ave., Chicago, Ill.
W. C. Griesser.

G. S. Robins & Co.,
310 S. Commercial St., St. Louis, Mo.
H. L. Dahm.

The Spangler Co., Inc.,
3331 Market St., St. Louis, Mo.
Robert H. Spangler.

Standard Refrigeration Parts Co.,
5101 W. Madison St., Chicago, Ill.
Herman Goldberg,
Harry A. Goldberg.

Carl Schneider Co.,
2210 Pestalozzi St., St. Louis, Mo.
Carl Schneider.

Carl J. Stein Co.,
122 W. Illinois St., Chicago, Ill.
Harry Drownes.

Superior Carbon Products, Inc.,
9115 George Ave., Cleveland, Ohio
Geo. H. Hastings.

Thermal Service Co., Inc.,
936 Raymond Ave., St. Paul, Minn.
H. W. Small.

R. E. Thompson Co.,
1538 Tower Grove Ave., St. Louis, Mo.
R. E. Thompson.

Universal Electric Products Co.,
607 Stephenson Bldg., Detroit, Mich.
C. E. Johnson.

United Refr. Supply Co., Memphis
Boyd Evans.

W. M. Refrigeration Co.,
2468 N. Third St., Milwaukee, Wis.
G. D. Wang.

F. A. McLaughlin.
Williams & Co., Inc.,
901 Penn Ave., Pittsburgh, Pa.

1748 E. 22nd St., Cleveland, Ohio
H. S. McCloud,
T. H. Metzler.

Young Supply Co.,
1050 W. Baltimore Ave., Detroit, Mich.
L. M. Young.

Proposed Constitution for Jobbers Association

ARTICLE I

Name

The name of this Association shall be NATIONAL REFRIGERATION SUPPLIES WHOLESALERS ASSOCIATION.

ARTICLE II

Objects

Its objects shall be to advance and protect the interests of wholesalers of refrigerator parts and to promote cooperation among the members.

ARTICLE III

Membership in the Association shall be limited to corporations, firms, and individuals actively engaged in the wholesaling of refrigerator parts and supplies.

Members shall pay such dues and enjoy such privileges as the By-laws of the Association prescribe.

Each member shall have enrolled in the Association one representative.

A representative of a member shall preferably be an executive officer of the member, if a corporation; a partner, if a firm; and the member him-

self, if an individual; but he may be an employee of the member, who has written authority to act for the member in the course of the Association's activities.

Each member may be represented at a meeting of the Association by a representative or by a representative holding the proxy of such member, and shall be entitled to one vote. Each proxy shall be in writing in form satisfactory to the Directors, and shall be good only for the meeting mentioned in it and for any adjournment or adjournments thereof.

At meetings of the Association, members owned or controlled by another member shall with such owning or controlling member have together only one vote, and members owned or controlled by one corporation, firm or individual not a member shall have together only one vote.

No representative shall act as an officer or Director of the Association or as a member of any of its Committees or as an officer, or member of any committee, after the termination for any cause of the membership he represents.

ARTICLE IV

Management

Subject to the direction of the members given by resolution adopted at any regular or special meeting, the management of the Association shall rest in a board of nine Directors who shall be elected at the organization meeting of the Association. Three of the Directors elected at the organization meeting shall hold office for three years, three shall hold office for two years, and three shall hold office for one year. Thereafter, the Directors shall be elected in classes at the annual meeting of the Association, all as provided in the By-Laws.

ARTICLE V

Officers

The Directors shall meet after the organization meeting and choose from their own number a President, a Vice President, a Secretary, and a Treasurer, who shall hold office for one year immediately following the annual meeting and until the election of their respective successors.

The President shall preside at all meetings of the Association, and subject to the direction of the Board of Directors, shall be its executive head.

During the absence or incapacity of the President, the Vice President shall perform the duties and have the powers of the President.

The Treasurer shall have the custody of the funds and assets of the Association, and shall keep for it proper books of account, which shall at all times be open to the inspection of any Director or member of the Finance Committee of the Association.

The Treasurer shall disburse the funds of the Association under the direction of the Board of Directors.

The Secretary shall have such duties as the Board of Directors may prescribe.

The President, Vice President, Secretary, and Treasurer shall receive no salary or other compensation for their services. The Secretary shall employ such help as shall be fixed by the Directors.

The Directors shall fill vacancies occurring in the offices provided for by this Article.

ARTICLE VI

Meetings

The annual meeting of the Association shall be held in October in each year on such date and at such hour and place as may be fixed by the Directors, and special meetings may be called and held as provided in the By-Laws.

ARTICLE VII

Amendments

Suggestions for amending, supplementing or repealing this Constitution, if approved at any annual or special meeting of the Association by the affirmative vote of the majority of the members present at such meeting by representatives or by proxy, shall be forthwith submitted to all the members by notice mailed to them by the Secretary, and a written vote taken thereon by mail. If two-thirds of the votes received by the Secretary in each case on or before the date specified in this notice, which date shall not be less than thirty or more than sixty days from the date of the mailing of such notice, shall be in favor of the proposed amendment, supplement or repeal, the Directors shall declare, and notify the members, that it has been adopted, otherwise it shall be deemed defeated and the members notified by the Directors accordingly.

By-Laws

ARTICLE I

Members

Each application for membership in the Association must be made to the Board of Directors in writing, accompanied by check for the initiation fee, and must name the person who will act as an Executive representative of the applicant, if elected. If

the application is approved by the Board, the applicant shall on the payment of the initiation fee and dues as hereinafter provided, become entitled to membership in the Association, under the terms and provisions of the Constitution and these By-Laws.

ARTICLE II

Meetings

Special meetings of the Association may be called by the President and shall be called by him on the request in writing of a majority of the Directors, or of not less than twenty-five per cent of the members of the Association.

Not less than fifteen days before each annual and each special meeting the Secretary shall mail to each member a notice of the meeting.

The order of business at meetings of the Association shall be as follows:

1. Roll call
2. Reading of minutes of the last meeting
3. Reading of communications
4. Reports of officers
5. Reports of standing committees
6. Reports of special committees
7. Unfinished business
8. New business.

At annual meetings the election of Directors shall be by written ballot after the transaction of new business.

The President or Vice President shall preside at all meetings of the Association. In the absence of both the President and Vice President, the members present shall elect a temporary Chairman.

ARTICLE III

Quorum

Twenty-five per cent of the members shall be a quorum at all meetings of the Association. A less number may adjourn.

At every meeting of each Committee of the Association a majority of the members of such Committee shall be a quorum.

ARTICLE IV

Fiscal Year

The fiscal year of the Association shall begin on the first day of October in each year and end on the last day of the following September.

ARTICLE V

Directors

At each annual meeting of the members of the Association, three Directors shall be elected, each for the term of three years, beginning immediately following the annual meeting, and Directors shall then also be elected to fill vacancies in the Board, each to take office immediately following the annual meetings for the unexpired term of the Director he succeeds.

Whenever a vacancy shall occur in the Board of Directors, the Directors then remaining in office may, by the affirmative vote of a majority of all of them, elect a Director to fill such vacancy and the Director so elected shall hold office until the following annual meeting.

A retiring member of the Board of Directors, who has held the office of Director for a full term of three years, shall be ineligible for re-election or appointment to the Board until after the lapse of one year from the date of his retirement.

Only representatives of members shall be eligible for election to the Board of Directors.

The Board of Directors shall hold meetings on the call of the President or of any five Directors, such call to be in writing mailed to each Director ten days, or telegraphed to him five days, before the meeting.

Past Presidents of the Association shall be ex-officio members of the Board of Directors, but shall not have power to vote.

ARTICLE VI

Committees

The following standing committees and such other standing committees as the Board of Directors may consider necessary shall be appointed by the Board, as hereinafter specified, after the annual meeting in each year, to hold office from the following first day of November and until the appointment of their successors:

Membership Committee to consist of three members to hold office for one year.

Finance Committee to consist of three members to hold office for one year.

The Board of Directors shall have the power to appoint such other committees as it may from time to time deem necessary.

The Board of Directors shall fill every vacancy that occurs in committees appointed by it.

Each of the said committees shall have such powers and duties as these By-Laws provide and as the Board of Directors may by resolution prescribe, and the Finance Committee shall in addition to all other duties assigned to it audit or cause to be audited as of the close of each fiscal year the books of the Treasurer of the Association and report to the members at the next annual meeting of the Association as to the result of such audit.

The Board of Directors shall at

least thirty days before each annual meeting of the Association appoint a Nominating Committee of five members to make nominations for the Directors to be elected at such meeting, and the Committee shall send to each member at least thirty days before such meeting a list of its nominees. After the issuance of such list, other nominations may be made in writing signed by not less than three members, and forwarded to the Secretary, provided that such additional nominations shall be received by the Secretary not less than seven days before the date of the meeting. The additional nominees so named shall be added to the list made by the Nominating Committee. At any election of Directors, those receiving the largest number of votes for the respective offices to be filled shall be declared elected and shall take office immediately following the annual meeting.

ARTICLE VII

Initiation Fees and Dues

The initiation fee of each member shall be Dollars. The annual dues for each member shall be Dollars.

All dues shall be payable annually in advance on the first day of November in each year.

If any member neglects to pay the prescribed dues within sixty days after the same shall have become due, such member shall, as a result of such neglect and without further action in the premises, be suspended from all rights and privileges of membership, and such suspension shall continue until the payment in full of all arrears of the member so suspended, or until the termination of the membership of the suspended member.

The membership of any member, suspended as aforesaid, who fails to pay such dues within sixty days after suspension, shall, as a result of such failure, and without further action in the premises, terminate unless the said period of sixty days shall be extended by the Board of Directors, in which case the membership shall, without further action, terminate at the end of the extended period, if such dues shall not then have been paid.

ARTICLE VIII

Resignations

Resignations of members and of representatives shall be in writing, addressed to the Board of Directors, and shall be acted upon at the next following meeting of the Board. The member or representative resigning shall be amenable to all rules and regulations of the Association to the date of such meeting. No member shall resign while indebted to the Association.

ARTICLE IX

Expulsion

By the vote of eight of the Board of Directors, any member or representative may be expelled for any cause, provided, however, that such member or representative be given an opportunity to be heard before the Board. On the question of expulsion no accusing or accused member or representative shall be entitled to vote.

Termination of Membership

The membership of any member by or against whom proceedings in bankruptcy or any proceedings based on insolvency are hereafter instituted, or of any member who makes an assignment for the benefit of creditors, shall immediately terminate as a result of such act, and without further action in the premises.

Reinstatement

The Board of Directors may in its discretion reinstate to full membership in the Association, without requiring a second payment of the initiation fee, any company whose membership has terminated for any cause, on the payment of all Association charges unpaid and having accrued in the interim.

ARTICLE X

Association Assets

The interest of each member in the funds, investments, and other assets of the Association shall be the same as the interest of each other member therein. But the interest in the funds, investments and other assets of each member whose membership shall terminate for any reason, whether as provided by Article VII or by Article VIII, or by Article IX of these By-Laws, or otherwise through the dissolution of the Association, shall ipso facto immediately cease and terminate and such member shall have no claim against the Association or against the other members or their representatives or any of them.

ARTICLE XI

Amendments

These By-Laws may be amended, supplemented or repealed by a majority of the members present at any meeting of the Association, or (except as to Articles III and X) by the Board of Directors on the concurrent vote of eight Directors.

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1,500,000 HOUSEHOLD UNITS SOLD IN 9 MOS.

San Diego and Cleveland Sept. Sales Reported

**Report by Distributors
In Cleveland Shows
Gain over 1934**

Retail sales of domestic electric refrigerators in Cuyahoga County, Ohio, for September, 1935, as reported by distributors, were 1,225, as compared with 984 units reported for September last year, according to figures compiled by Ralph S. Jones, secretary of the Electrical League of Cleveland.

Total estimated sales of electric refrigerators for San Diego County, California, retail outlets during September of this year were 675, as compared with 1,250 units during August, 1935, bringing the total estimated sales for the first nine months of this year to 5,750, reports J. C. Chamberlain, secretary-treasurer of the Bureau of Radio & Electrical Appliances at San Diego.

This nine-month's figure is considerably greater than the total number of units sold in all last year.

September sales of electric ranges for San Diego County were estimated at 40, making the nine months' estimated total 271. Radios sold in September in the same area were estimated at 1,075, making the nine-months total 8,150.

Detroit Ice Machine Co. Host to Frick Men

DETROIT—Distributors of Frick refrigerating equipment located within 600 miles of Detroit were guests of the Detroit Ice Machine Co., local Frick distributor, at a series of meetings and conferences here last Tuesday, Wednesday, and Thursday.

Tuesday's business sessions were held under the direction of the Detroit Ice Machine Co., with George Bright and Theodore Huetteman in charge. During the day the guests made an inspection trip through the Wolverine Tube Co. plant.

On Wednesday Universal Cooler Corp. played host to the Detroit Ice Machine Co. and its guests. At the business sessions new Universal Cooler commercial condensing units (which Frick distributors handle under the Frick nameplate) were presented, and engineering developments outlined. Frank S. McNeal, Universal Cooler Corp. president, was toast-

(Concluded on Page 16, Column 5)

Kelvinator Directs Its Fall Drive at Xmas Buyers

DETROIT—Going into the last two months of the year with an aggressive campaign, featuring a Christmas letter-writing contest and special terms, Kelvinator Corp. is announcing to its distributor organization throughout the country a complete fall sales program.

It is explained by Sam C. Mitchell, director of advertising and sales promotion, that the new fall program has been developed to dramatize for Kelvinator dealers and salesmen the full profit possibilities of electric refrigerator selling during the fall and winter months.

Special meetings of Kelvinator distributors and their wholesale men are being held in "key" cities to acquaint them with the new fall sales campaign, and to prepare them for the 1936 program. More than 400 men are attending these meetings, which are being held in Detroit, Boston, Philadelphia, Atlanta, Chicago, Kansas City, Dallas, Los Angeles, Portland, Ore., and Denver, during the last week in October and the first week in November.

Members of the sales and advertising departments of Kelvinator are conducting the meetings and announcing Kelvinator's plans. These officials are: H. W. Burritt, vice president in

(Concluded on Page 8, Column 1)

York Plans Larger Program for 1936

YORK, PA.—Further expansion of the commercial refrigeration division of the York Ice Machinery Corp., a redoubling of sales efforts in the field of industrial refrigeration, and a sales program on air conditioning commensurate with the company's growing business in that field, were determined upon in the annual fall meeting of York regional, branch and sales managers at the factory here during the week ending October 26.

During the same week, branch engineers also convened at the factory, holding joint sessions with the managers on the first two days and meeting separately during the remainder of the week. Leading feature of the joint sessions was a preview of product developments for next year.

In the general session on Monday morning, William S. Shipley, president, welcomed the delegation. The corporation's books have not yet been

(Concluded on Page 10, Column 1)

Parts Jobbers Given until Jan. 1 to Join New Association as Charter Members

National Refrigeration Supplies
Wholesalers Association
Office of the President
901 Pennsylvania Ave.
N. S., Pittsburgh, Pa.

Publisher:

As the formation of the newly organized National Refrigeration Supplies Wholesalers Association took place in the reception room of your efficient establishment, we consider it both proper and a distinct pleasure to make the first official act of the Association a letter conveying our sincere appreciation to you personally, and to your able staff, for the hospitality and fine cooperation so helpful to us in making this Association possible.

May we assure you that this Association will always be mindful of the close relationship existing between us.

We are confident that as time passes by, this relationship will draw us more closely together, fused by our mutual activities and cooperation for a common cause, the refrigeration industry.

Our Association has high hopes of

achievement for the general benefit of the refrigeration business as a whole, and sincere intentions to help create a higher standard of business policies and practices for the refrigeration supply jobbing business nationally.

We believe that our aims and ambitions may be realized, and are mindful that the possibilities for achievement of these aims will be greatly augmented by the added co-operation of the several refrigeration supply jobbers not able to be present at the formation of the Association. It is our sincere hope that they may see fit to become members of our Association, and we extend to them an invitation to join us as charter members, provided their applications are received not later than Jan. 1, 1936.

Please permit us to wish you and your organization continued and greater success in the work you are doing for the refrigeration industry.

H. S. McCLOUD,
President.

Air Conditioning for Bus Developed by Houde & Carrier

NEW ORLEANS—Development of a new air-conditioning system for application in commercial passenger motor busses and private automobiles was disclosed last week by representatives of the Houde Engineering Corp. and Carrier Engineering Corp. at the meeting of the National Association of Bus Operators.

Details of the newly perfected system which provides air cooling or year-round conditioning similar to that in use on railroads, in theaters, and in stores, were outlined in a joint paper delivered by Ralph F. Peo, general manager of the Houde Engineering Corp., a division of the Houdaille-Hershey Corp. of Detroit,

Commercial Changes Name To 'Super-Cold Corp.'

LOS ANGELES—Commercial Refrigerator Mfg. Co. of this city has changed its name to "Super-Cold Corp."

The company manufactures commercial refrigerators, commercial condensing units, and counter-type ice cream freezers.

G-E Salesmen in 24-Hour Drive Honoring 'Zim' Sell \$1,365,227 of Appliances

CLEVELAND—Salesmen for General Electric home appliances staged a 24-hour nation-wide sales drive—running all through the night—starting last Friday, which netted a total of \$1,365,227 in retail sales of electric refrigerators, ranges, and dishwashers.

This around-the-clock selling effort was staged as a tribute to P. B. Zimmerman, manager of General Electric's specialty appliance department. The day was known as "Zim's Red-Letter Day."

G-E salesmen throughout the country, after calling on prospects at their places of business and in their homes, turned their sales guns on night workers. They sold the policeman on his beat, firemen, theater attendants, motormen, conductors, railroad workers, telephone employees, morning newspapermen, restaurants, dance hall people, gas station attendants, and, in fact, they covered the entire field of people who work through the night.

Directing the one-day drive was Jean DeJen, national campaign manager, who established headquarters in Cleveland's Hotel Statler for the day. There hourly reports were received from General Electric distributors in 56 of the country's leading cities. As these reports came in by telegraph

Industry's Sales For September Gain Over '34

**Estimated Total for First
Nine Months Passes
1,500,000 Mark**

DETROIT—Sales of household electric refrigerators by manufacturers to distributing outlets during September totaled 63,852 units, to bring sales for the first nine months of the year up to 1,529,552 units, according to estimates compiled by ELECTRIC REFRIGERATION NEWS.

September's total, although little more than half the 120,700 reported sales for the industry during August, and still considerably lower than the high mark of 72,300 for the month, established in 1933, is nevertheless well above the September, 1934, mark of 47,600 units.

World shipments of household electric refrigerators during the month, (Concluded on Page 19, Column 3)

and over long distance phone, the hourly progress of the day's selling was chalked up on huge blackboards.

An optimistic total of a half million dollars in sales had been set up as the day's quota. Officials had little hope of reaching it. But when the final figures had been compiled the sales had touched almost 300 per cent of that mark.

A. M. Sweeney, national sales manager, felt so elated that he wired the results to Owen D. Young and Gerard Swope, chairman and president, respectively, of General Electric; and he also sent a wire to President Franklin D. Roosevelt.

These results seem more remarkable, claim G-E officials, when it is considered that these General Electric salesmen have been in the midst of an eight-weeks' sales campaign, and that half of the G-E distributors and their sales organizations were far over 100 per cent of their campaign quotas. Still, in the face of the fact that their "hot prospects" had been sold during the campaign, they were able to roll up a total of approximately \$1,400,000 in 24 hours. No special prizes were offered on "Zim's Day."

Salesmen were totally unprepared (Concluded on Page 2, Column 4)

Window Displays Like These Help Sell Refrigerators in the Christmas Season



Leonard Conducting 8 Meetings Presenting Fall Sales Campaign

DETROIT—At a series of special meetings being held in "key" cities throughout the country, distributors of Leonard electric refrigerators and their wholesale men are learning of a fall sales campaign and prospects and programs for 1936 from officials of the Leonard Refrigerator Co.

The meetings are being held during the last week in October and the first week in November in the following cities: Detroit, Boston, Philadelphia, Atlanta, Chicago, Kansas City, Los Angeles, and Portland, Ore. Officials of Leonard who are conducting the meetings are: H. W. Burritt, vice president in charge of sales; Sam C. Mitchell, director of advertising and sales promotion; P. D. Sowell, Leonard advertising and sales promotion manager; and J. J. O'Neill, manager of the major retail outlets division.

Special Christmas Contest

As announced at the meetings by Mr. Burritt, the fall sales campaign is designed to increase sales of Leonard electric refrigerators by dealers during the next two months. Included in the plans is an advertising program designed by the manufacturer to attract attention to refrigeration for the home from now until Christmas.

Leonard dealers are offered the help of the factory in conducting a Christmas letter writing contest in their

own communities. Those dealers who hold such contests will carry on special advertising and sales promotion activities with the intention of attracting prospects to buy a Leonard electric refrigerator now.

No purchase will be necessary for any person, in the towns where the contest will be conducted, to enter the contest. All that each entrant must do is to secure an official contest folder, which explains all the rules of the contest and gives suggestions, and then write as complete a list as possible of the Leonard features and 50 words or less on the feature which has the greatest appeal to the writer.

Local Prizes

The prize in each local contest will be one or more Leonard electric refrigerators, to be awarded by the dealer.

Judges for each contest will be prominent local people selected by the Leonard dealer.

"Our plans for 1936," Mr. Burritt is telling distributors and wholesale men at the meetings, "include a product with some revolutionary improvements, and an ambitious advertising and sales promotion campaign. Already we have begun to advertise in trade publications which will pave the way for the announcement of the 1936 models, to be announced some time after the first of the year."

Cooperative Activity of Philadelphia Dealers Aids Washer & Ironer Sales

PHILADELPHIA—That cooperative campaigns pay seems to be the verdict of distributors who cooperated with the Electrical Association of Philadelphia in the first electric washing and ironing machine campaign of its kind to be conducted in this territory. An increase of 27 per cent in washing machine sales and 88 per cent in ironing machine sales was reported by those distributors cooperating in the activity which closed recently.

16 Manufacturers Cooperate

Manufacturers and distributors representing the following 16 makes of electric washing machines and ironers cooperated with the association: ABC, Apex, Automatic, Dexter, Easy, G-E, Hotpoint, Kenmore, Meadows, Norge, Prima, Thor, Universal, Westinghouse, Zenith, and "1900."

A total of 472 retail dealers took part in the activity, including those from the following five counties: Bucks, Chester, Delaware, Montgomery, and Philadelphia.

43 Sales from 37 Demonstrations

Dealers reported 43 sales as a direct result of 37 demonstrations given for groups in various dealers' stores throughout the territory by an expert demonstrator employed by the association. These demonstrations were directed to a group of women who were invited to the dealer's store for the dual purpose of watching the demonstration and actually operating the ironing machine themselves.

In addition to direct sales derived from these demonstrations, prospects were developed for dealers to follow up in the future.

Campaign promotion was chiefly concentrated on 48 radio programs, which featured a contest based on the question, "Why Family Laundry Should Be Done at Home." Entrants in the contest were asked to write in 50 words or less their opinions on the question. The winner, each week during the 4-week campaign period, won a complete home electric laundry, consisting of an electric washing machine and ironer, with a retail value of \$150.

As a means of stimulating dealer interest in the distribution of contest blanks, a special bonus of \$25 was awarded to the dealer whose name appeared on the prize-winning coupon each week. Contest entry blanks were distributed by retailers.

2,347 Entry Blanks Received

In this way dealers had an opportunity to approach the prospective customer for a washer or ironer sale and give a display and demonstration. A total of 2,347 entry blanks were received by the association during the four-week period.

In addition to radio announcements, features of the campaign were described in bill enclosures sent to domestic customers in the territory served by the Philadelphia Electric Co., and an announcement was run in the Sears Roebuck publication—*Cross Country News*.

Window banners—containing the campaign slogan "Modernize your home with a complete electric laundry"—and broadsides describing the campaign in detail were other promotional media furnished the dealers by the association.

It Was a Red Letter Day!



General Electric headquarters in Cleveland's Hotel Statler was a busy place as reports of the nation-wide 24-hour drive on Nov. 1, "Zim's Day," rolled in. At work in the picture are Beatrice Nack, Thelma Kelly, Jean DeJen, G-E contest manager, Lehman Wood, and Ruth Jones.

Connelly Will Handle Housefurnishings & Hardware

SEATTLE—F. B. Connelly Co., distributor of electric refrigerators, washers, and radios, with headquarters here and branches in Spokane, Portland, Ore., Billings, Mont., and Great Falls, Mont., has enlarged its facilities to include the handling also of hardware and housefurnishings specialties, effective Nov. 1.

Display and warehouse facilities are being enlarged, and a new \$50,000 building is being constructed at Billings, home of United States Senator F. B. Connelly, founder of the company, now said to be one of the largest distributing organizations in the Northwest.

In addition to the products listed above, the Montana branches of the company (known as the Connelly Machine Co.) also distribute construction and farm equipment. The company finances its dealers time payment sales through the Connelly Acceptance Corp., with headquarters here.

Dealer in Town of 2000 Sells One a Day

MILAN, Mich.—In this town of 2,000 population, the Milan Hardware Co. has averaged a refrigerator sale a day from July 19 to the first part of October. The company has sold 51 refrigerators in that time on the modernization credit plan of the Federal Housing Administration.

G-E Salesmen Honor P. B. Zimmerman With All-Night Quota-Smashing Drive

(Concluded from Page 1, Column 5) for the special day's activity, as no advance ballyhoo of the day had been staged. National campaign headquarters in Cleveland had merely sent a letter, marked "personal and confidential," to the distributors, suggesting that they set aside Nov. 1 as "Zim's Day."

The distributors were urged to call all their salesmen, and as many of their nearby dealers as possible, together for an early morning breakfast on that day, at which the sales organization was given its first information concerning the all day-all night drive. After the breakfast, salesmen called up their homes to inform their families they "wouldn't be home until morning."

Dealers Told by Telephone

A number of distributors arranged for conference service calls, whereby they talked to outlying dealer sales organizations over the long distance telephone, advising them of the drive, and urging them to cooperate. Dealers did cooperate, as well as utility companies and department stores. They phoned and wired reports throughout the day and night to the distributors, who, in turn, kept national headquarters advised.

A total of 500 telegrams and 100 long distance phone calls came into Cleveland, giving sales results and bringing greetings to Mr. Zimmerman.

To present some idea as to sales results, R. Cooper, Jr., Inc., Chicago distributor, sold a total of \$166,000 worth of appliances on that day. Rex Cole, Inc., New York City, reported \$132,000; Caswell, Inc., Detroit, \$91,000; Philip H. Harrison Co., Newark, \$69,000; Electrical Household Appliances, Inc., Dallas, \$69,000; George Patterson, Inc., St. Petersburg, Fla., \$74,000; Judson C. Burns, Inc., Philadelphia, \$52,000; Electrical Housekeeping, Inc., Cleveland, \$46,000; George Belsey Co., Ltd., Los Angeles, and Electric Appliances, Inc., San Francisco, \$45,000 each.

Southern Appliances, Inc., New Orleans, reported \$36,000 in retail sales, while Bard & Barger, Inc., Columbus, Ohio, reported \$35,000. James & Co., St. Louis, sold \$29,000 worth of kitchen appliances; B. K. Sweeney, Inc., Denver, sold \$18,000.

73% of Quota in 1 Day

To realize the full significance of these figures, it must be borne in mind that these were retail sales to the consumer—not sales to dealers. In the case of George Patterson, Inc., Florida distributor, they sold on this one day more than 73 per cent of their entire eight-weeks' campaign quota, in face of the fact that up to that day they had realized 250 per cent of their campaign quota.

Caswell, Inc., of Detroit, sold seven complete electric kitchens on that day—one being sold to K. T. Keller, president of the Chrysler Corp., for \$2,000 alone. Many distributors reported big sales, also, to apartment house owners and many big commercial sales to restaurants, hotels, clubs, and schools.

More complete electric kitchens were sold on "Zim's Red Letter Day" than had been sold during the last

three months, according to National Campaign Director DeJen. Also more ranges and dishwashers were sold than during that quarter-year period, many distributors reporting more sales of ranges than refrigerators—an unusual fact, J. R. Poteat, range division manager, points out.

Surpass Week's Sales

At the same time, more electric refrigerators were sold on this one day than were sold during a whole week of the peak spring selling season.

"This one-day campaign," says DeJen, "had a number of things to recommend it. First, it was a tribute to Mr. Zimmerman, who is known personally to most salesmen because he has talked to them and with them at their various sales conventions in the past. It was the first 'Zimmerman' day ever staged in the nine-year history of the specialty appliance department of the company.

"Then, too, a certain amount of sales psychology was attached to the one-day's stunt. If we had asked the distributors to stage a 12-hour drive it wouldn't have been so unusual. But when we asked them to have their salesmen and dealers work around the clock, there was an element of novelty. It captured their imagination.

"It intrigued them. We asked for such a seemingly impossible thing that they accepted the challenge with alacrity."

In all sales campaigns, DeJen believes there should be something spectacular, and, furthermore, each campaign should be different and should contain elements of showmanship, color and atmosphere.

Do Campaigns Pay?

"Some sales executives and sales managers frequently question whether campaigns pay," he continues. "Like national advertising it often is impossible to estimate tangible results. This one day's drive unquestionably proves the value of campaigns. We believe that sales campaigns form a highly specialized activity; that they require careful planning, careful timing, and the engendering of mass enthusiasm.

"We try to capitalize, too, on the appeal which showmanship has for the average American. We try to have a basic understanding of why people act as they do and how we can get them to react favorably to a proposition.

"Sometimes it may seem that we stage too many sales campaigns," DeJen continues. "However, the truth of the matter is that if campaigns have enough variety and enough human appeal, they keep the salesmen's job fresh and colorful every day in the week and month."

"Zim's Red Letter Day" drive had no advance ballyhoo, except the letter to distributors asking them to participate. With the letter went suggestions, such as the staging of an early morning breakfast for salesmen, at which they received information of the day's event for the first time. Most distributors served the breakfast Friday morning and a midnight lunch Friday night. Salesmen then went back on the sales job.

"AN OLD NAME IN A YOUNG INDUSTRY"

CURTIS

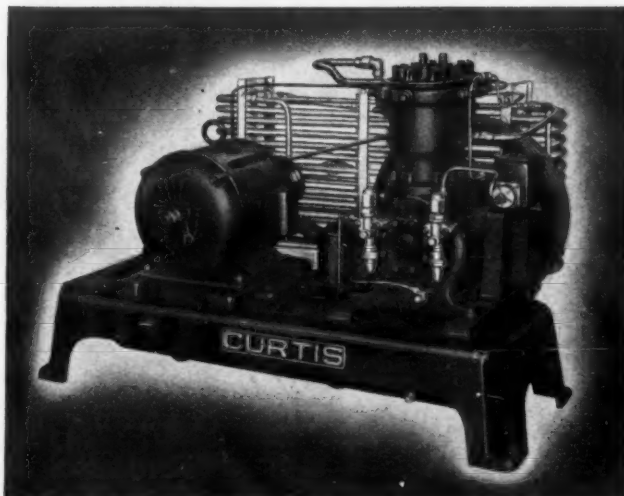
Specify CURTIS and be sure

ELECTRIC REFRIGERATION AND AIR-CONDITIONING UNITS

The sure way to satisfaction from a refrigeration or air-conditioning installation is to be certain that its most vital part—the condensing unit—is built by Curtis. Their constant, trouble-free performance is the result of 41 years' specialized experience in building fine compressors.

Complete Line—59 Units • Extra Capacity • Slow Operating Speed • Experienced Design • Low Upkeep • Rugged Construction • Fine Materials and Workmanship

Curtis enjoys the highest capital and credit rating—a Curtis product won't become an "orphan".



CURTIS

Curtis Refrigerating Machine Company
Division of Curtis Manufacturing Co.
1912 Kienlen Avenue — St. Louis, Mo.



WATCH OUR SMOKE!

FRIGIDAIRE DEALERS!

GREAT PLANS ARE IN THE MAKING FOR YOU

New program will be most advanced in Company's history . . . Frigidaire dealers can look forward to greater volume and increased profits in 1936!

● Never has the Frigidaire Franchise been as valuable to you as it will be in 1936. Next year's plans, rapidly nearing completion, will provide you with the greatest opportunity you've ever had to do a bigger business on this outstanding leader. Meanwhile consider these four important selling advantages that *only* Frigidaire offers:

1. **Two Famous Names:** "FRIGIDAIRE" and "GENERAL MOTORS"
—Best known and highly respected everywhere.
2. **A Quality Product:** Perfected by Frigidaire in collaboration with General Motors' famous engineering laboratories.
3. **Selling Helps:** More complete, more practical than you can get anywhere else. Dealers everywhere attribute much of their success with FRIGIDAIRE to the outstanding sales services that they get only from this factory.
4. **Knowledge of Dealer Sales Problems:** Frigidaire goes far deeper into the problems of refrigerator merchandising. The campaigns, specialty selling programs and merchandising activities furnished by Frigidaire are recognized as outstanding in the industry. They are based on an actual knowledge of the dealers' needs and are designed to give you the maximum results and profits for your effort.

And so we say to you, Mr. Frigidaire Dealer, that you are in a better position today than ever before. You may look forward to the coming year with the knowledge that "*You'll Do Better with Frigidaire—in 1936!*"

FRIGIDAIRE CORPORATION • Dayton, Ohio

You'll do Better with

FRIGIDAIRE IN 1936

THE GENERAL MOTORS REFRIGERATOR

Knapp Says Auto Dealers Who Sell Appliances Do Best When Operating in Small Towns

By John Knapp, Vice President in Charge of Sales, Norge Corp.

THE collapse of the stock market in 1929 shut off the demand for radio sets, and suddenly precipitated a country-wide problem of survival among the radio dealers. Up against it to find that volume flow which would permit them to survive, they found a compensating opportunity in electric refrigeration.

Now, automotive dealers face the same predicament as did radio dealers, and can find the same solution to their profit problems by engaging in appliance merchandising.

While these disastrous trends occurred with flashing suddenness in the radio field to drive such dealers into appliance merchandising, the same trends have been much slower in the automotive field.

Car Makers Worried

Lately, however, so interested have auto dealers become in the wider possibilities of appliance selling that the two largest motor manufacturers have found it necessary to restrict their distributive organization organization from the handling of other products without factory permission. This indicates that the trend has become sufficiently widespread to be newsworthy.

An indication of the trend is revealed in the fact that Aug. 1, The Warren-Norge Co., Inc., took over the leases, inventory and staff of the branch which we had maintained in the metropolitan New York area. Charles B. Warren, president of this new distributing company, was for 18 years Nash automotive distributor in the New York area.

Auto Dealers' Profits Drop

Said Mr. Warren on leaving the automotive field and entering the appliance field:

"I am saying goodbye to the industry because changing conditions make it almost impossible for the average automotive dealer to earn an adequate profit. And without proper profit no enterprise can survive.

"One of the most fundamental reasons for the profit difficulties of the automotive dealer is narrowing margins, caused by the increasing proportion of lower price cars in any given sales volume.

"Yet, because the automobile now has to be sold, increasing resistances demand additional promotional power, necessitating added selling expense which is difficult to supply from dwindling margins so that, with the trade-in hazard lurking constantly in the background, the average automotive dealer finds himself in the red no matter how effectively or aggressively he performs.

"There is, in consequence, a widespread and urgent desire among automotive dealers to find some compensating volume and profit to make

up for the penalties which the majority now feel in their established businesses.

"It can be prophesied that there may be a great influx of automotive dealers and distributors into the home appliance field in the immediate future; not only because that field offers an unusual selling opportunity, but because it provides a cushion to soften the effect of falling profits in the automotive field. And I believe the two operations are, to a considerable degree, companionable."

I should like to refer briefly to the experience of a few Norge distributors throughout the country, all of whom have been interested in the promotion of dealers in automotive channels. I should like also to refer to a few instances of the performance of such automotive dealers to indicate not only the interest, the problems, and the methods, but the success which has been attained.

Best Records in Small Towns

Current records indicate that automotive dealers who take on appliance lines do the best job in small towns. Peter Sampson of the Sampson Electric Co., of Chicago, Norge distributor, has a number of automotive dealers handling Norge appliances and believes that those located in small towns do the best selling job.

For example, there is the Uptown-Norge Co. of Gary, Ind., which segregates its appliance department from its automotive merchandising department. From January 10, 1935 until September this firm has moved 371 refrigerators, 33 washers, three ironers and 18 ranges.

Another dealer in the Sampson territory, the Krebs Home Modernizing Co., of Michigan City, Ind., (which also has set up a separate appliance department, distinct from its automotive retailing operation) attained a sales volume of 98 refrigerators, 15 washers, four ironers, and 22 ranges from Jan. 28 until Sept. 1 this year.

Both of these examples show a healthy appliance accomplishment when compared to the average dealer volume.

Have Good Showrooms

A. Y. McDonald Mfg. Co. of Omaha, Nebr., has been active in promoting appliance representation among automotive dealers with unusual success. One of its dealers, the Flanders Sales Co. of Beatrice, Nebr., sold 24 refrigerators and seven ranges in that small town during the first six months of 1935. This dealer handles Chrysler and Plymouth cars, and is apparently happy over the additional volume which appliances have brought.

In outlining the reasons why automotive dealers are good appliance merchants, E. J. Nellor of the Omaha distributing company says:

"They usually have a good showroom. They are accustomed to the appliance type of merchandising and to the need for outside selling. Likewise, they are accustomed to making investments of considerable size, and to buying on terms similar to those insisted upon in the appliance industry."

In the Tennessee distributing area the Motor Sales Co. of Helena, Ark., Dodge-Plymouth dealers, has had an unusually fine year in a town of 8,000 population. During the first eight months of the year, 58 Norge refrigerators were sold. Wayne-Spinks Co., Norge distributor for the area, says that "Most of our automobile dealers are located in very small towns and are doing a fine job."

Lehleitner Plans Drive

Down in Louisiana the Daly Motor Supply Co. of Opelousas (populated by 6,000 persons) during six months of 1935 have sold 17 refrigerators and four ranges. George Lehleitner, president of the Norge distributing company of Louisiana, states that his experience has been very satisfactory with this type of outlet, and plans an intensive drive to appoint automotive dealers in the majority of the small towns of his area.

Willard M. Wood, president of the Automotive Sales Co., Houston, Tex., Norge distributor, declares:

"Personally, I feel the automotive type of outlet represents the best and most substantial dealer in every town and locality."

Among those which have done an outstanding job for Mr. Wood are dealers in Wharton, Dayton, League City, and Danbury, Tex.; all of whom, although in small towns, have attained a volume worthy of big city dealers who operate exclusively and intensively.

Canadian Dealers Progress

Up in Canada there has been a great amount of interest among automotive dealers in appliance selling. The firm of Giles, Rice and Peters, selling Buick, Oldsmobile, and Chevrolet and distributing Frigidaire refrigerators are said to have done a remarkable job. Also, in the city of Toronto there is the firm of Mills and Hadwin, who handle electric refrigeration and are making a splendid success.

Robert A. Harding of the Salt Lake Hardware Co., Norge distributor for the area, has had two very successful appliance dealers of the automotive type. Regarding the methods of one of these, I quote Mr. Harding:

"His method of selling is that in the first place he has a very representative stock on display in an attractive sales room devoted entirely to Norge products, just the same kind of a display room that he devotes to automobiles. We know that this automotive dealer has had fewer service calls than any of our other dealers. This, we feel, is due to the fact that all of his sales organizations are mechanically inclined and absorb more service information than salesmen in almost any other line."

Dealers Are Service Minded

E. O. Hunting, general manager of the Auto Equipment Co., long-time Denver, Colo. automotive jobber and also Norge distributor, has likewise had considerable success in appliance selling through automotive dealers. States Mr. Hunting:

"An automotive merchant is a merchandiser and is service minded. In the small town, this dealer knows everyone and will sell a refrigerator or washer to the man who has bought a motor car from him last month or last year. In the larger towns, it is necessary for the car dealer to set up a separate department to handle household appliances and we know of very few cases in our territory where this setup has worked out unsatisfactorily."

'Logical Outlets'

The fact is, the closer you analyze the experience of automotive dealers, the more certain you become that here is the logical source for successful small town dealer expansion.

Ray P. Harten, president of the Harten-Knodel Distributing Co. of Cincinnati, puts it this way:

"Your line of reasoning in regard to automotive dealers being interested in appliances, is justified, particularly in our outlying territories. The few automotive accounts we are now selling are doing a satisfactory job in their localities compared to competition."

\$8,000 Volume in 3 Months

In Syracuse, N. Y., the Beam-O-Lite Co., a garage across from the Syracuse hotel, started selling Norge appliances exclusively on June 1, 1935, and in less than three months had run up a retail volume of more than \$8,000, which indicates that automotive dealers, at least of the servicing type, can be expected to do a good big city job.

Close-by to Syracuse is Rochester where Rathel's, a well-known tire company, has sold 20 refrigerator units in the first six months of 1935. In Rochester also, are Hall's Sales and Service Co., Hall's Service Station and other dealers with automotive

Nice Work - - - if You Can Get It



A sale in process. Mercedes Simone, one of the leading radio artists in the Argentine, gets a demonstration of some of the fine points of a Westinghouse refrigerator. She bought a BL-75 model.

interests who are doing a splendid appliance job.

Finally, among the hundreds of automotive dealers who are doing a splendid job of merchandising appliances, I must call attention to the outstanding achievement of the Lucas-Kidd Co. of Anderson, S. C. It hasn't been too easy to sell anything down there; but H. R. Kidd is tops as a merchandiser. For instance he pulled 50,000 people under the "Big Top" to his Norge tent show at the Anderson County Fair, and his sales record on Norge appliances this year has skyrocketed.

500 Auto Dealers Handle Norge

In the entire Norge field sales organization, there exists nearly 500 automotive dealers together with many other dealers who are associated in activities of the automotive field such as filling stations, tire services and battery shops. These have been attracted into the appliance field with the evident interest of gaining a compensating volume and, as nearly as can be analyzed from the specific figures I have on hand, their average sales volume runs parallel to the average volume of the appliance merchant.

This indicates that such outlets, even though interested in other activities, make good appliance dealers. Since there has been a movement, during the past few months, among automotive dealers towards the merchandising of appliances, I believe that the appliance distributive rank will be largely augmented by this type of merchant.

Knapp Outlines Reasons

The deductions of the merit of such outlets which can be made from the research I have initiated are as follows:

First, the automotive dealer is more valuable when operating in the small town. Automotive retailing in big cities requires such an intense effort on his part as to demand departmentalization if he is to engage in appliance selling and, therefore, apparently create some difficulty.

The fact is that from the study of a number of successful metropolitan operations, it seems wise for the automotive dealer to departmentalize if he is to go into the appliance business—divorcing his automotive and appliance operations. But, from the standpoint of the small town, the dealer there can handle both lines—even though widely separated—successfully and with profit to himself.

Afford Proper 'Exposure'

The automotive dealer is set up to do a good appliance selling job in that his experience in automotive merchandising has made him sympathetic to the need of proper product exposure in attractive salesrooms. Likewise, particularly in the past year or two since automobiles have turned into products "which have to be sold," he and his selling organization realize the importance of carrying the merchandising effect outside his store.

Further, the automotive dealer is educated toward stocking a representative line and knows the value of "volume display." Rather than attempt to stir greatest public interest by stocking only one appliance model, he generally sees the need of stocking the full line and of displaying it attractively so that the maximum number of people can see it, inspect it, compare it, and have it demonstrated.

From another angle, the dealer who has been handling automobiles realizes the importance of rendering satisfactory service and is set up, mechanically, to do this with dispatch. Inasmuch as any appliance, having

moving parts, is bound to require some service eventually, this is an important factor of sales satisfaction. One of the peculiar elements in the electric refrigeration business is that the refrigerator plays such a vital part in family life that unusual service is required.

The average family is unwilling to have the electric refrigerator operating noisily or inefficiently for even a few moments time and, at the slightest hint of trouble, calls up the dealer for service even though it may be unessential.

Thus, the ability to render service is an important consideration in maintaining customer satisfaction.

Exclusive Distribution Trend

There is a decisive drift towards exclusive representation in the appliance field. Many manufacturers are introducing full lines of appliances which can be sold by the same methods to the same prospects and with the same arguments. The attempt is to turn a sale of one into a customer for all.

From the dealer standpoint, there is a decided advantage in representing a single manufacturer in that it creates no confusion of plans, permits a careful integration of seasonal sales campaigns and allows the full exploitation of satisfaction for one company and product to help out in creating the sale for others of like manufacture.

But the habit of the average appliance dealer has been to represent a number of manufacturers and, even though he may be acquainted with some of the advantages of exclusive representation, he still is inclined to continue a diversified representation.

Used to Exclusive Franchise

On the other hand, the automotive dealer has been accustomed during all his experience to the exclusive representation of a single line, and he knows well all of the advantages of this policy. Therefore, when he enters the appliance field, the tendency is to take on one line exclusively and to give it his total sales support.

My prediction is that there will be a great many more automotive outlets in the appliance field during the next eight months, and from this trend the home appliance industry can expect to benefit greatly.

Lewis Appointed Baltimore Kelvinator Manager

BALTIMORE—William R. Lewis has been appointed manager of the Baltimore division of Southern Wholesale, Inc., Kelvinator distributor here.

For the past several months, Mr. Lewis has been assistant general sales manager for the refrigeration and radio divisions at the Washington, D. C., headquarters of Southern Wholesale, Inc. Prior to this he was associated with Baltimore Victor Distributors, Inc., and Barber & Ross, former Washington, D. C., Kelvinator distributor.

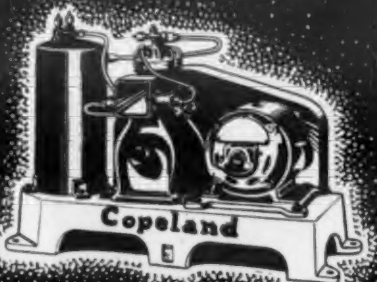
Miller Electric Named Norge Dealer

JACKSONVILLE, Fla.—The Miller Electric Co. here has been appointed a dealer for Norge products, report officials of Norge-Nestor Co., Inc., Norge distributor for Florida. H. G. Miller is president of the dealership. The Miller Electric Co. also handles Westinghouse and Graybar ranges and hot water heaters, and Fresh'n'd-Aire air-conditioning and circulator equipment.

All the RESOURCES
plus AN EXCEPTIONAL
PRODUCT!

COPELAND

COMMERCIAL REFRIGERATION



MODELS TO FIT
all APPLICATIONS

COPELAND REFRIGERATION CORPORATION

Manufacturers of a complete line of Household and Commercial Refrigeration
Holden Ave. at Lincoln . . . DETROIT, MICH.

Copeland
DEPENDABLE Electric REFRIGERATION

THOSE who qualify for the Copeland Commercial Refrigeration franchise have a line that is strongly entrenched, a product of exceptional merit, manufactured by a company of large financial resources. Copeland Commercial Refrigeration has set a performance standard seldom equaled. It is making history in this industry, because of remarkable operating efficiency and long-time economy. Job after job is going to Copeland. A few territories are available. We suggest that you investigate the possibilities.

Engineered for Leadership!



Reading from left to right: G. STRELINGER, Sales . . . H. W. NEWELL, Advertising Counsel . . . E. HEITMAN, Chief Engineer . . . S. C. MITCHELL, Advertising . . . B. B. GEYER, Advertising Counsel . . . G. W. MASON, President . . . E. A. SEIBERT, Service . . . H. G. PERKINS, Vice-President . . . H. W. BURRITT, Vice-President, Sales . . . J. A. HARLAN, Sales . . . V. C. WOODCOX, Advertising Counsel . . . C. C. THOMAS, Engineering . . . V. J. McINTYRE, Sales . . . G. M. EVANS, Vice-President, Manufacturing . . . ALEXIS de SAKHNOFFSKY, Consulting Designer

Each year since the beginning of the industry, Kelvinator engineers have made outstanding contributions to the development of electric refrigeration.

Each year for 21 years, more Kelvinators have been sold than in any previous year—a record unmatched by any other electric refrigerator manufacturer.

When planning and designing the Kelvinators

for 1936, the suggestions and advice of the field organization and all those who are responsible for our selling and promotional activities, were given full consideration.

When you see the Kelvinators for 1936 you will recognize that

they were engineered and designed for leadership. You will know why the talk is that "Big Things are Happening at Kelvinator."



Kelvinator

The Only Electric Refrigerator in 1936 with the _____ !

ACCESSORIES

Sale of Accessories by Service Men Helps Dealer Win Out In Price Cutting War

DES MOINES—By convincing customers that "you get what you pay for," H. E. Sorenson, manager of the Sorenson Co., electrical appliance dealer here, was able to build up a substantial and profitable refrigeration service business in the face of a destructive price 'war.'

When the Sorenson Co. decided to swim upstream against the price-cutting current, one competitive service shop offered complete inspection below cost, and another did refinishing of exteriors for a "song." Both were spending large sums to advertise cut-price practices.

"We had one of two decisions to make," said Mr. Sorenson. "We could either play along with our cut-price competition, and starve to death, or take the opposite course—maintain prices that would pay our men a living wage, and show a profit to the company."

First thing Mr. Sorenson did, after deciding to take the second course, was to increase his service men's wages from a 40-60 to a 50-50 basis. That is, the men were paid half of the receipts on every job they did. An immediate effect of this move was a notable rise in the quality of the

work which the men turned out.

This better work resulted in customer satisfaction which more than offset the higher prices which the company was charging.

Encouraged by this display of confidence in quality materials and workmanship, the Sorenson Co. decided on an unusual step in service company procedure—it sold its service, workmanship, parts, and supplies—to its customers.

Mr. Sorenson tells the story:

"We planned to sell our service in four steps.

"First, we laid our cards on the table in talking with customers. When a bargain-hunter quoted the 'specials' he read about in the local newspapers, we made no pretense of meeting them. We told him, frankly, that he'd get just what he paid for—that our men were working for living wages, and could give each job the time and attention it merited.

"Secondly, we made our parts and accessories help sell themselves. We fitted out a comfortable waiting room with comfortable chairs, newspapers, and magazines—and arranged an extensive display of refrigerator parts, as well as complete refrigerators.

"We filled two show cases with all sorts of freezing unit parts and gadgets—things which mean practically nothing to the average homeowner.

"How does this help us to sell a repair or service job at a fair price? Well, it's impressive, and creates curiosity—but above all, it aids materially in our third step.

"When a refrigerator is inspected for repair work, a list is made of all the parts needed for the job. These necessary parts are taken out of the show cases, and placed on the counter for the customer's inspection.

"He sees the parts—feels them. To him, they are real merchandise, and not merely a list of parts on a job ticket. He knows exactly what he is paying for. As we show him the parts, we point out just what it is that has worn out and needs replacement. He understands, and is satisfied.

"Our fourth step was an extensive radio and newspaper advertising campaign, which convinced refrigerator owners that our prices were fair and our service and merchandise first-class."

This policy increased the company's business to such an extent that it has moved to new and larger quarters, in order to handle the demand for its service.

"Giving quality merchandise and service at fair prices is an old, old story," Mr. Sorenson says, "but it seems to have been forgotten during the hysteria of recent years.

"Because we sold high-grade replacements and accessories, and rendered painstaking, accurate service, we felt justified in charging prices high enough to enable us to do business at a profit.

"Quality workmanship, like quality merchandise, doesn't sell itself—it must be sold.

"You get just what you pay for," we told our customers. That was our answer to price-cutting competitors."

Step No. 1 in Accessory Selling



Complete display of accessories in a dealer's window showing (on floor) rubber ice cube trays, holdover dishes, water jugs, ice cream molds, and earthenware refrigerator dishes. Other accessory items are shown in the cabinet itself.

Dealer's Special No-Down Payment Plan Spurs Xmas Buying; Accessories Are Used to Close Hesitant Prospects

By Winifred B. Hughes

ROYAL OAK, Mich.—Fifteen household electric refrigerators were sold during Christmas week last year by the Royal Oak Appliance Shop as a result of a special time payment plan that offered installations with no down payment and only small "good will" fees of three or four dollars a month until March, when regular payments were begun.

"We advertised this payment plan in the local paper, stressing the low-cost angle," says Paul Raymond of the dealership.

"During this promotion we sold at least 34 units more than we would have moved ordinarily," he added.

When a Royal Oak prospect for a refrigerator wants to purchase a floor model which contains glass food dishes, or similar refrigerator accessories, and the salesman feels that the accessories have held much of the buying appeal of the unit, this dealership "throws in" the accessories "for good measure"—without adding any figures to the price tag.

"If a lady is intrigued with the green glass dishes on a revolving tray, and we tell her that they just go with the deluxe model, her face falls," said Mr. Raymond. "Rather than risk losing the sale, we throw them in for good measure."

Advertising copy employed by the dealer in this Christmas campaign advised Mr. Prospect to "buy your wife a gift that will last." Special refrigeration displays were placed in the store window and on the floor.

Although plans for this year's Christmas campaign are still incomplete, Mr. Raymond thinks a similar time-payment plan may be used.

Right now Mr. Raymond has another problem on his hands. To meet competition set up by local dealers, and those from out of town who sell on the FHA finance plan, he plans to hire an outside selling crew of 25 men, and to concentrate his advertising to get back lost sales ground.

"There's money in the small town electrical shop—at least there was here until out-of-town representatives started covering our territory," declares Gale Taylor of this company.

Mr. Taylor explained that they intend to advertise in local and Detroit papers for new salesmen whom Mr. Raymond will train. Mr. Raymond says of the plan:

"We intend to divide the sales crew into groups, members of each group selling one make of refrigerators only. They will be trained in the selling points of the line they represent.

"We plan to give the men from 20 to 25 per cent commission on the sales they make. As soon as they are trained they'll go right into the field to get results. And its going to be a bring-back-sales-or-don't-come-back proposition."

Illustrative of the competition they are facing, Mr. Raymond, told of a sale made in this town in which a bull dog was accepted as the \$35 down payment on an electric refrigerator.

"Women, at least the women of Royal Oak, love bargains," he said in discussing promotion methods used by the company. "They like to think they get unheard of values for a little less than the ordinary price. To please them we run sales, and you should see them come in!

"We have been advertising a repossessed model for the last few days, and already we have sold seven other units on the strength of this advertisement. One prospect came in to get a 'used' refrigerator which we advertised. When she left she had purchased a new Gibson refrigerator and a Thor washing machine. She spent about \$250 instead of the \$20 she intended to spend."

Mr. Raymond seemed so pleased with this sales promotion method that he told about several similar sales.

"One man came in to see the repossessed model advertised," he relates. "While he was looking around the store, he saw a refrigerator which Mr. Johnson and Mr. Taylor (co-partners in the store) had constructed themselves. He bought this instead of the model he came in to see."

Advertising used by this dealer includes weekly full-page and small daily insertions in the local paper, along with direct mail, special prize offers, and similar mediums of sales promotion.

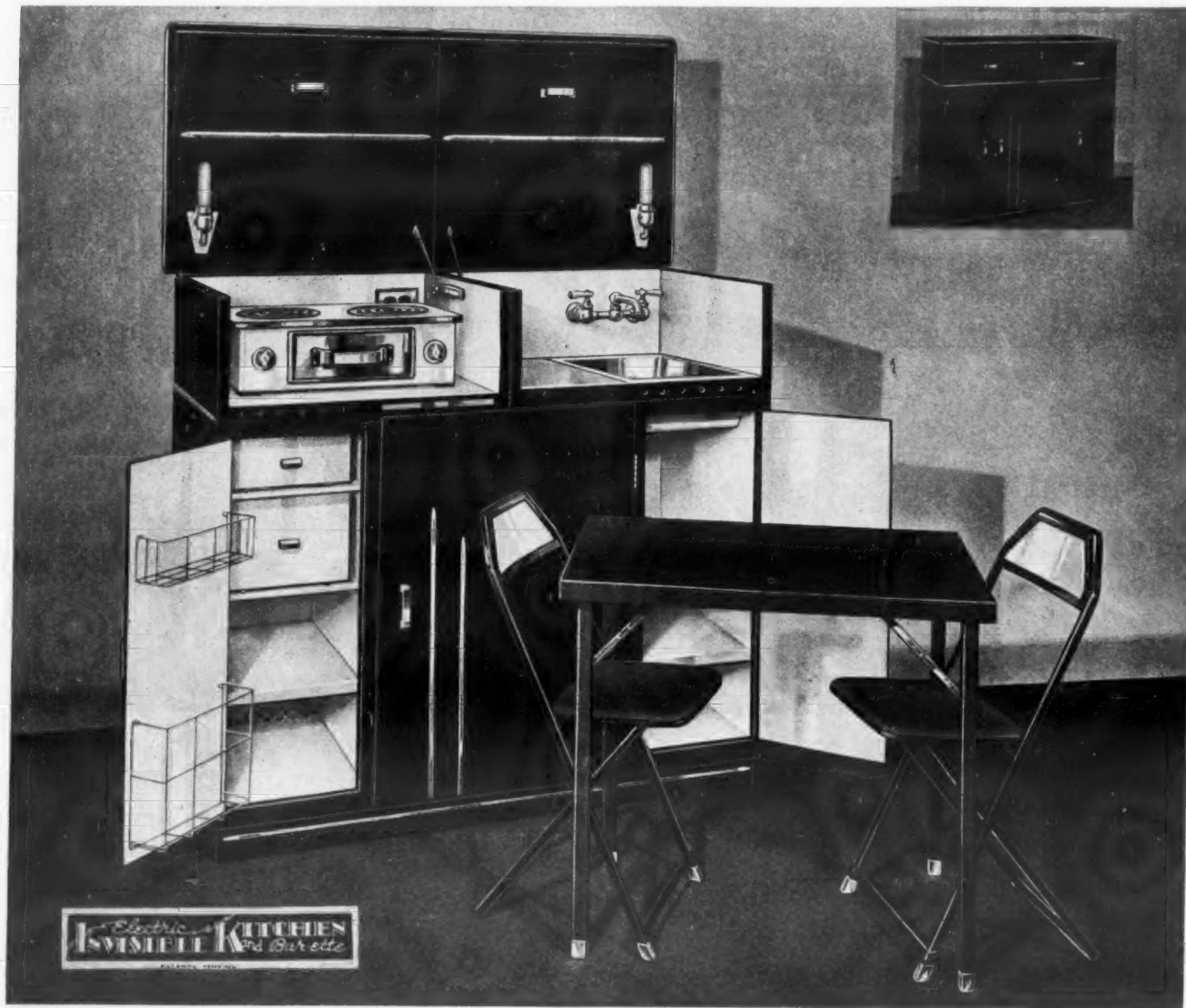
In a tie-in with the cooking school sponsored by the town newspaper, held Oct. 29, 30, 31, the Royal Oak Appliance Shop gave away five hand irons to women who brought in the coupons obtained at the class.

"Entrants have been coming in all day, and I wish you could be here at 5 o'clock when the contest closes tonight," they'll probably storm the place," Mr. Raymond smiled. "You see they write their names and addresses on the coupons, and we have some valuable additions for our prospect lists."

Another one-day special in which purchasers of a washing machine sold by this company had a chance on a small white-cabineted radio, was featured in their newspaper advertisement Oct. 31.

New Company Will Make Artificial Food Display

UNION CITY, N. J.—National Food Display Co., organized recently, has just finished putting its production facilities in shape to manufacture kits of artificial foods, for use in all makes of electric refrigerators.



Electric Invisible Kitchens Provide Two Profits

One Profit for the live dealer who sells Electric Invisible Kitchens, and or Apartment House owner who installs these cabinets, which transform the Complete Kitchenette Facilities, thereby increasing the rental possibilities and income. Today, more than ever, Electric Invisible Kitchens are filling the need and demand for Compact Kitchenette Facilities, and when closed, Electric Invisible Kitchens become a beautiful article of furniture.

There are many unusual and outstanding features in Electric Invisible Kitchens—Five different sizes and models, each designed to fit a specific need and space. Every model is equipped with the In-a-Dor Serving Table (when not in use, is concealed in back of front center panel door); on all models, the complete refrigerator compartment, is mounted on track slides, and when necessary for service, entire refrigerator pulls out, like a drawer. Metal folding chairs, as shown,

furnished at reasonable prices (when not in use, are concealed in back of cabinet in place provided, out of sight).

New—Model S. S. No. 6, same size, style and finish as Model S. S. No. 1 pictured above, with two burner surface electric stove and built-in electric oven—Monel Metal Sink, Refrigerator, Table, etc., a complete, compact Electric Kitchen for Hotels, Apartments and Summer Homes—Priced astonishingly reasonable.

Electric Invisible Bar-ette—an "entertainment" unit of wide appeal—a complete Portable Bar-ette for the home, office, clubs, etc., with Electric Refrigeration—write for more and complete details.

Model S.S. No. 1

as illustrated, furnished complete with Monel Metal Sink; Chrome Plumbing Fixtures; Electric Stove and Broiler; Electric Lights on top covers; Standard Electric Refrigerator; In-a-Dor Table; Pull-out Bread Box and Linen Draw; Bread Board; Backs on Door for Utensils. Cabinet only 54" long, 25" deep, 48" high, closed. Finished in Ebony and Chrome outside, Ivory inside, including porcelain refrigerator.

ELECTRIC INVISIBLE KITCHEN CO.

General Offices:
La Salle-Wacker Bldg.

CHICAGO



DEODAIRE The scientific air-conditioner for refrigerators

Absorbs all food odors—Stops intermingling of food flavors—Eliminates contamination—Reduces excess moisture—Helps prevent decay—Purifies the air—

DEODAIRE is entirely automatic and requires no attention—Every refrigerator owner needs one or more—Retail for 75 cents. Dealers, write for prices, etc.

DEODAIRE, INC., 540 N. Mich. Ave., Chicago

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H. W. BURRITT, Vice-Pres., Sales . . . G. W. MASON, President . . . L. E. LATHAM, New York Distributor

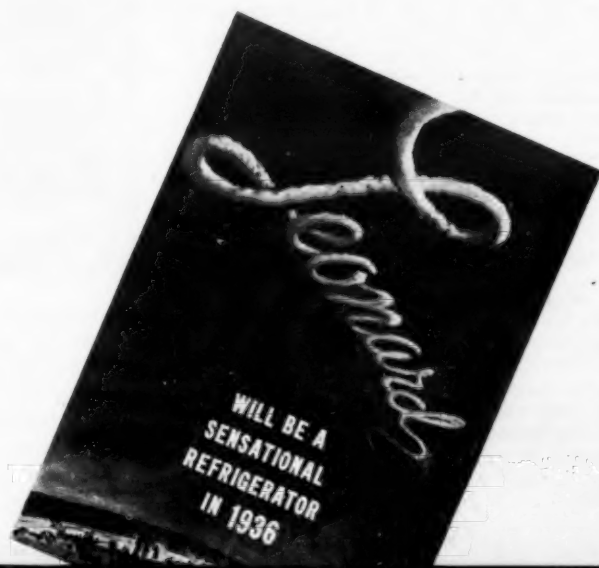
My answer is.. **"Watch NEW YORK!"**

"When I went to Detroit last week, I didn't know what I was going to see. The first thing that impressed me at the Leonard factory was that every man I met seemed filled with a new enthusiasm.

"Then, when I saw the Leonard refrigerator for 1936, I knew why. It is a sensational refrigerator. Sensational in design—sensational in features—sensational in performance.

"Will dealers like it? Will salesmen like it? Will the public *buy* it? My answer is—'Watch New York!'"

MR. L. E. LATHAM, Vice-President, E. B. LATHAM & CO., NEW YORK



CHRISTMAS MERCHANDISING

By Talking Refrigeration to Xmas Buyers, Wyandotte Dealer Sells Eighteen Units in Two Weeks

WYANDOTTE, Mich.—"What did we do to push our refrigerator sales during the 1934 Christmas campaign? Well, we talked refrigeration. We'd ask a hardware customer if he owned an electric unit, and if his answer was 'no' we'd gently lead him to the back of our store and turn him over to one of our three refrigeration men," relates Otto Asmus, co-proprietor of the Jager Asmus Hardware Store here.

That this method proved efficacious is evident in the fact that 18 electric refrigerators were sold in the two-week period preceding Christmas. To spur the salesmen on, a contest was inaugurated with prizes of a suit of clothes and a gladstone bag offered to the man making the most sales.

While this store does not sponsor prize contests for purchasers of electric refrigeration, sales work is backed with consistent advertising efforts. Sections of the full-page insertions, which the dealer uses three times a week in the local paper, are devoted to refrigerators.

In a special fall sale held recently this company ran a four-page advertisement in the Wyandotte paper in which three-fourths of a page played up the Norge refrigerator "no down payment, pay as-low-as-a-dollar-a-week" plan being featured by this dealer.

Kelvinator Campaign to Feature Xmas Contest

(Concluded from Page 1, Column 2)

charge of sales; G. Strelinger, general assistant to the vice president in charge of sales; Sam C. Mitchell, director of advertising and sales promotion; V. J. McIntyre, domestic sales manager; and Walter Jeffrey, domestic advertising and sales promotion manager. V. C. Woodcox, Detroit manager for Geyer, Cornell & Newell, Inc., Kelvinator advertising counsel, also is taking part in some of the meetings.

Included in the fall sales campaign Kelvinator is offering to its dealer organization a completely worked out consumer contest plan, which has been made flexible enough to fit the demands of all sizes of outlets. To be held from Nov. 15 to Dec. 25 by local dealers from one end of the country to the other, this contest is expected to be the largest of its kind ever held in the electric refrigeration industry.

Recommended as the basis of the contest is a letter writing competition on the subject, "Why I Want a Kelvinator for Christmas." Prizes will be standard, medium-sized Kelvinators, and the factory will cooperate in helping dealers to offer one or more of these models in each locality.

Contests will be promoted by means of salesmen's calls, direct mail advertising, and local newspaper copy, plus other promotional activities dealers may wish to carry on.

Appeals which will be used to promote sales during the contest period will include special winter terms through which time payments will be dated to begin several months from the actual time of purchase, and the provision in the contest rules that if a contest entrant buys a larger sized Kelvinator than specified as a prize, she will be given the model she purchased in case her letter wins a prize. Judges will be selected from among local civic leaders, women's clubs, and church groups.

Contest folders, explaining the contest in detail, will be obtainable only from Kelvinator show rooms. No purchase of any kind will be necessary for entering the contest.

Promotional material for the contest has been prepared by Kelvinator and will be available to dealers on special price basis, as will a special window display. Advertising of the contest will be on the usual cooperative plan.

Greber Manages Hines Co. Showroom Sales

BALTIMORE—Saul Greber has been appointed showroom floor manager for The Hines Co., distributor of General Electric refrigerators and appliances, here, it was announced recently.

Formerly, Mr. Greber was manager of the refrigeration, appliance, and radio branch of Hecht Bros., in its North Ave., Market Branch, here.

"Wyandotters are, for the most part, stolid German people, and they don't favor the idea of purchasing on time. They prefer to wait until they can pay cash, before they purchase," said Mr. Asmus in discussing the effect the FHA finance plan had upon his sales.

"However," he added, "when they do come in to purchase a refrigerator on the FHA plan, we almost always sell them a range at the same time. Because the payments are low, they decide they may as well take both appliances."

A large room in the rear of the hardware store is devoted to displays of refrigerators, ranges, and radios. Here 19 refrigerator units give the customer full chance to choose a box from among the four lines carried.

That the three salesmen who handle refrigeration in this store find Wyandotte a happy-hunting-grounds for prospects, might be deduced from Mr. Asmus' statement that one salesman has sold 100 units since Feb. 15 up to the present time.

"Which means," said Mr. Asmus, "that he sold one every second day, if you average it up."

Mrs. Edna Macnamara, home economist of the Radio Distributing Co., Detroit Norge distributor, conducted a cooking school in the refrigeration and range display room at the store here recently. Invitations to Wyandotte housewives were included in the store's advertising copy.

Sales Contests & How to Run Them

NO. 14—MONTHLY 'CHRISTMAS' PRESENTS OF SILVER TO QUOTA MAKERS GETS SUPPORT OF WIVES OF SALESMEN

By John Kumler, Sales Contest Manager
Buckley, Dement & Co., Chicago

The Bartlett Realty Co. found this idea very good.

All their men were assigned sales quotas for the year.

At Christmas time (just a week before the year started) an empty box, designed to hold, when filled, one dozen each of knives, forks, and teaspoons, was sent to the wife of each salesman with a short note from the boss.

This note explained that the box was empty but that each month that her husband made his quota, she would receive a sterling silver knife and fork—and that if her man succeeded in filling the box by the end of the year, you'd send her a dozen

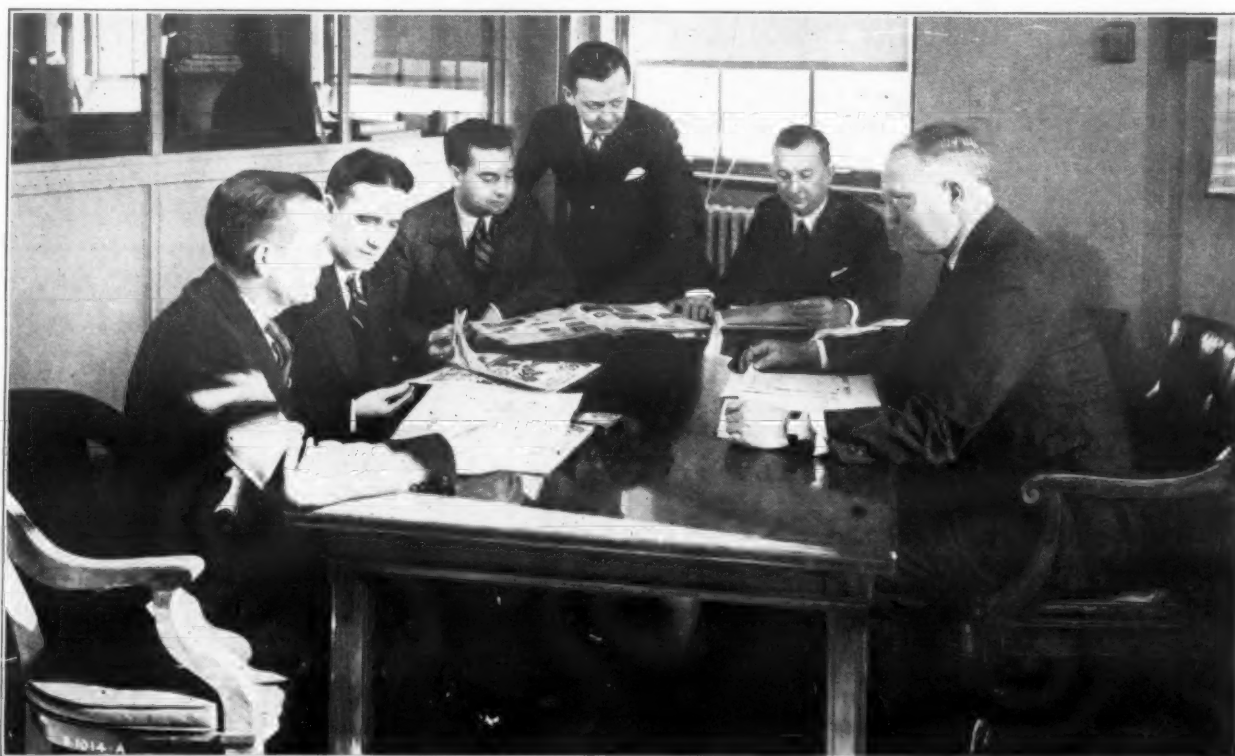
sterling teaspoons to match.

Furthermore, she was told that if hubby fell down any month, he could regain the silver "lost" that bad month by doing 10 per cent or more over quota, any succeeding month, providing it was done during the year in which this plan was in operation.

It was the experience of the users of this plan that as soon as the wife got the first silver, she was on their side with both feet. And how she did press her man until he had made up any off month he may have had!

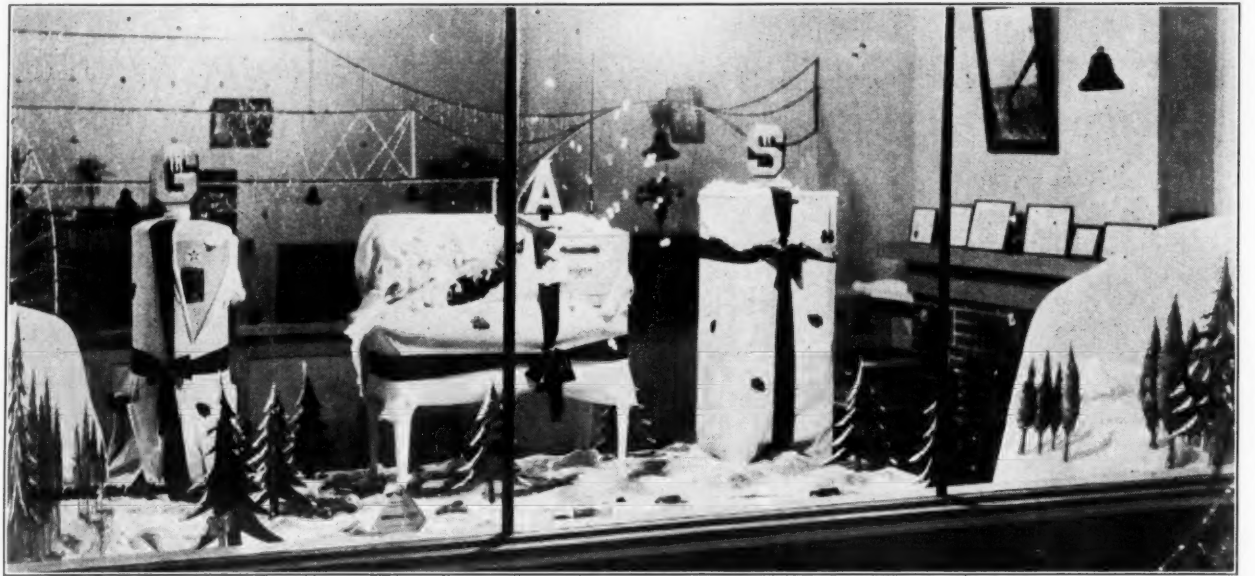
The wives of your salesmen are too important a factor in the lives of their husbands for you to overlook.

Outline Plans for Christmas Letter Writing Contest



Kelvinator officials discussing final plans for the Christmas lettering writing contest (see page 1) before leaving Detroit for meetings being held in 10 "key" cities from coast to coast, at which they are announcing Kelvinator's fall sales campaign and plans for 1936 and the contest. Facing H. W. Burritt (at right), vice president in charge of sales, are (left to right): Sam C. Mitchell, director of advertising and sales promotion; V. C. Woodcox, Detroit manager of Geyer, Cornell & Newell, Inc., advertising agency; Walter Jeffrey, domestic advertising and sales promotion manager; V. J. McIntyre, domestic sales manager, and G. Strelinger, assistant to Mr. Burritt.

Christmas Display Features Companion Products



The 'Christmas Package' idea in Yuletide season window display isn't new, but here's a fine example of it, with refrigerator, range, and water heater all done up in red ribbon.

Peoria Dealer Suggests Radio as Christmas Gift In Advertisement on Back of Monthly Bill

PEORIA, Ill.—Direct mail advertisements printed on the back of monthly bills are helping to boost sales made by the electric refrigerator and radio department of Clarke & Co. here, 30 per cent above those made last fall, reports Jack M. Kaplan, manager of the department.

September bills contained an advertisement suggesting that the customer give a radio as a Christmas gift. This plan was used early in the summer also, when the bills had a cut of a Westinghouse model sold by this company, and copy stressing the summer comfort angle of electric refrigeration. These advertisements were sent to the 8,500 credit patrons of the store.

These promotion methods have been supplemented by placing small folders

with the monthly bills. Backing this up is an advertising campaign which features daily ten inch advertisements, in preference to one large weekly insertion.

Another potent prospect-getter is the sign fronting the building. This has a larger-than-life built-in refrigerator that may be seen for several blocks, and which forms a sign post for persons directing inquirers to the store.

\$10 Down, No Monthly Payment Until March Boosts Holiday Sales

TOPEKA, Kan.—To keep sales moving from November to March, the electric appliance department at Crosby's, here, has a finance plan for refrigerators which has a special appeal for the Christmas shopper. The arrangement is \$10 down during the holiday season, starting with mid-November, and no further billing until March 1.

Several sales factors are involved in the shaping of the plan. First, says Department Buyer R. I. Seymour, it has an acceptance stimulator in the appeal that the two main feast holidays of the year—Thanksgiving and Christmas—may be made more enjoyable by insuring safe food refrigeration.

The \$10 down payment is also chosen with Christmas shopping in mind. It comes within the average-gift bracket. Isolated as it is with no further payment until March, the gift suggestion makes an impression.

In adopting the extended credit interlude between the down payment and the first regular installment, Mr. Seymour explains that prospects marked for spring promotion were particularly considered. The first payment—March—brought these prospects forward for mid-November.

Plans for Christmas Merchandising Made By General Electric

CLEVELAND—Specialty appliance department of General Electric Co. will offer its retail outlets a special Christmas selling plan to boost holiday sales of refrigerators, ranges, dishwashers, and other electric home appliances. While the plan has been worked out in detail, announcement of the various activities which it will combine have not been made.

The plan will urge retail outlets to take full advantage of, and to tie in with, national magazine advertising and other sales promotional literature and sales helps. Special magazine, newspaper, and outdoor advertising has been prepared to tie in with the holiday season.

Cooperative Display Of Appliances Helps Build Sales at Xmas

WASHINGTON, D. C.—A cooperative exhibit of electric refrigerators, appliances, and accessories, arranged for and sponsored by the Electric Institute, proved an effective method of increasing Christmas business in the national capital last year.

The whole campaign was planned with the idea of giving the buying public plenty of time to see the appliances displayed, discuss them at home, and make their selection before Christmas. More than \$25,000 worth of appliances were shown.

Announcement of the exhibit was made in a special 12-page rotogravure section, circulated with Washington's largest evening newspaper on Dec. 3. The pages of this section were crowded with Christmas gift ideas, leading off with refrigerators and winding up with the smaller appliances.

Readers were reminded that here was an opportunity to visit the exhibit and see all manner of electrical appliances, without being obligated, or even asked, to buy anything. They were encouraged to come in and look around anyway, whether or not they planned to make this an electrical Christmas.

As was expected, this sort of appeal brought visitors by the thousands, who flocked to the first and fourth floor display rooms of the Institute to see the appliances which member dealers and distributors had supplied.

The exhibit, largest in the national capital's history, contained at least one model of every electrical device known to the domestic market. Especially large and complete was the section of the exhibit given over to electric refrigerators.

Decorations were in the holiday spirit, and attendants were at hand to explain to visitors the various features of the models shown. Nothing could be purchased at the exhibit; so visitors were encouraged to look over the displays most carefully, noting prices, features, and gadgets—something they probably would not have done had they sensed an obligation to buy at the showing.

A card, on each model of refrigerator shown, told its price, capacity, and the names of the dealers who merchandised it in Washington.

The rotogravure section also contained individual advertisements of the various dealers who were cooperating in the exhibit, each advertisement suggesting a specific appliance as most appropriate for a Christmas gift. Electric refrigeration, here, was again the major point around which suggestions revolved.

From rotogravure, to Institute, to dealer—that is how the campaign was planned.

Short Stories of Big Successes

*won by wise advertisers
in the past five years of depression*

AS an American institution, the Success Story has suffered eclipse in recent years.

And the pleasant pastime known as "pointing with pride" has likewise acquired the stigma of bad taste.

Nevertheless, at the risk of seeming immodest, we are impelled to relate the experiences of certain clients of Lord & Thomas in the last five years of depression.

Because those experiences are important to other advertisers.

Because they show the way to advertising that functions profitably and effectively, even in time of stress.

Because they prove that true salesmanship-in-print most surely finds the answers to the selling problems of today.

With the reader's indulgence, therefore, we proceed to "point with pride."

Proof of the Pudding

In one case, an advertiser has paid a ten-year advertising bill, running into millions of dollars annually, entirely out of increased profits. While doing this, his company's earnings were enlarged by an even greater amount, purely and simply through salesmanship-in-print applied to a single product.

Another—a food product. One of the oldest in America. So well entrenched, so familiar to all, that one might say advertising could do little more than sustain volume. Yet new salesmanship-in-print of compelling interest increased its sale more than 35% in the past year. And in one stroke, solved a host of vexing problems of private brand competition.

* * *

Another—a drug product. One year ago it was going back. In fact, a business consultant advised discontinuing the operation entirely. Today, it is making money. It is entrenched with consumers. And enjoys the preference of the best outlets in drug distribution. The whole difference was the type of salesmanship-in-print.

* * *

Another — a packaged product. Last November this brand was starting from scratch. The manufacturer dreamed of a nation-wide demand. And geared up manufacturing to supply it. His advertising began a few days before Christmas. Within five months, sales on this one item alone far exceeded \$2,000,000.00 a month. In its industry

it is the outstanding example of demand created by advertising.

All in the "REASON-WHY"

These are the rewards of salesmanship-in-print. Advertising that gives, in an interesting way, REASONS-WHY it is in the consumer's interest to buy what you have to sell.

A product does not have to be new to yield new advertising ideas.

Men with feel for ideas that sell, often dig great advertising success out of seemingly barren ground.

Check your advertising for its value as salesmanship-in-print. Perhaps your great REASON-WHY has never been told. Some of our greatest successes are made with products in which others fail to find a winning idea.

Advertising success, like all commercial success, depends on getting big men behind you. The whole question centers on who can sell the most for the money.

In answer to that question—

There are more success stories in Lord & Thomas today than ever before in our history. And that covers a lot of ground. In the past five years of depression alone we have invested in advertising for our clients \$180,000,000.00.

LORD & THOMAS • *advertising*

There are Lord & Thomas offices in New York; Chicago; Los Angeles; San Francisco; Toronto; Paris; London
Each office is a complete advertising agency, self-contained; collaborating with other Lord & Thomas offices to the client's interest

York Plans Expansion in Commercial And Air Conditioning Fields

(Concluded from Page 1, Column 2)
closed for the fiscal year, Mr. Shipley pointed out but said that there is no doubt but that the year was much better than the previous period.

"Up until the last three or four years," Mr. Shipley said, "our principal problem has been one of producing fast enough to meet the demand for our products. Depressed business conditions and our recent diversification of products have made sales rather than production the major problem. Selling performance of the past year has demonstrated the ability of our organization to meet these changing demands."

New Production Machinery

S. H. Shipley, general works manager, then described some of the new, specially designed production machines which are being installed in the air conditioning manufacturing shops this fall to increase output and lower costs. Layout of the sheet metal shop is being entirely revamped, he reported, and production lines re-routed for next year.

General Sales Manager S. E. Lauer next explained that the purpose of the joint managers' and engineers' meetings was to discuss mutual problems and bring about a closer understanding of the work of each group. The joint meetings were worked out by W. E. Zeiber, assistant chief engineer, and Mr. Lauer.

Stair Is Speaker

He then introduced W. S. Stair, formerly advertising manager of the company with offices in New York City, who has moved to the factory to become director of product research and engineering.

Next speaker was E. A. Kleinschmidt, vice president. Mr. Kleinschmidt, whose principal concern is the financial side of the business, first declared that the corporation is in a strong financial position. He then discussed inventory control, installation costs, transportation, and other expense items which are controlled by the branches.

Llewellyn Williams, engineer-in-chief, spoke next, inviting the field men's "ruthless" criticism of the new developments to be shown. He explained that these new developments are projected for next year, and that factory engineers will be guided by suggestions of the field men in making their final designs.

L. S. Morse, executive engineer of the company, then welcomed the group in behalf of the engineering department.

To Seek Operating Data

Final speaker of the morning was Mr. Zeiber, who explained that factory engineers are anxious to get all available information on operating performance from the branch engineers, and requested the benefit of their experience to augment factory research.

In closing the meeting, Salesmanager Lauer asked each of the five regional managers to rise and give a few remarks—F. A. Weisenbach of Brooklyn, John Schurman of Cleveland, W. E. Becker of Houston, W. L. Hutton of St. Louis, and R. H. Beck of Los Angeles.

Preview of New Developments

During the two days of joint meetings, the combined group of managers and engineers previewed the development program, offering suggestions for incorporation into the new designs before they are placed on the market. This took the form of open forum discussions, led by specialists on various sales divisions of the company.

Thus in the air conditioning discussion, J. R. Chamberlain of the mechanical engineering department treated Freon water coolers, condensers, motors, and complete condensing units; A. W. Ruff of the development department discussed ceiling and floor type air conditioners; and Scott Nicoll of the mechanical engineering department discussed new designs of dehumidifiers and air washers.

New Ratings Discussed

For the commercial division, Henri Brysselboud discussed the new A.S. R.E. condensing unit ratings, fin coils, direct expansion aerators, and Freon condensing units, while L. A. Ramsey took up control systems and ice makers.

Discussion in the dairy division centered around plate type heat exchangers, temperature controls, and results of field tests reported by V. C. Patterson of the mechanical engineering department.

For the industrial division, Mr. Ramsey directed discussion of water ice plants, ice cubes, and Flake plants, and Mr. Chamberlain discussed Freon and ammonia compressors,

water and brine coolers, and ammonia booster compressors.

Pratt Discusses Accessories

W. I. Pratt, chief draftsman, presided over that portion of the meeting which was devoted to the accessories and supplies division, explaining York's new cold storage door hardware and the application and design of cold storage doors.

Beginning Wednesday morning, the branch managers and engineers held separate sessions, the managers convening in the new assembly room at York's Grantley plant, and the engineers meeting at the Yorktown Hotel. Mr. Lauer presided over the manager's meeting during the remainder of the week and Mr. Zeiber directed the engineers' meetings.

Managers' Meetings

First subject on the managers' program was air conditioning, which A. N. Barnes of Brooklyn treated in a paper presented to start the discussion. Mr. Barnes described a number of sales practices which have been most successful in the New York territory.

One of these, which he urged other branches to adopt, is keeping the salesmen informed of the interesting installations being made.

"Every time a unique installation is made by our organization, data on it should be sent to the branch so that it can be presented to other salesmen at their meetings," he said. "This should be mapped out in good style, including some diagrams. Such information may come at a very opportune time to help them on active or future jobs."

Prospects Want Results

"The type of prospect being dealt with will be the governing factor in the method of approach," Mr. Barnes averred. "The average buyer, such as the restaurant or specialty shop owner, unless technically inclined, is most interested in results that he is going to obtain, operating cost of the equipment, reliability of the company he is buying from, and the initial cost of the job."

"On larger installations where a plant engineer, consulting engineer, architect, or the owner himself is technically inclined, it is possible to discuss design of equipment, adaptability, and flexibility of equipment to meet his demands, various outstanding features of the equipment, efficiency of operation, initial investment, and simplicity of operation," he said.

Previewing next year's air conditioning line, managers were shown that the changes are mainly refinements designed to make the equipment easier to install, more efficient in operation, and adaptable to special needs with less work in the field.

Good Dairy Jobs on West Coast

Discussion on dairy machinery was in charge of Walter Breen, manager of the dairy division. Much of the discussion centered around a report of dairy machinery sales in the Los Angeles territory by R. H. Beck, western regional manager.

Kernel of Mr. Beck's talk was a recommendation that other branches follow the example of Los Angeles in setting up a separate branch sales department to concentrate on dairy equipment sales, fitting out plants completely with all the necessary machinery and supplies.

On request of York dairy salesmen it was agreed that the company will develop certain new types of products to round out York's line of dairy equipment.

Commercial Division

C. A. Pearson, national commercial supervisor, presided over the meeting Thursday morning on commercial refrigeration and small air conditioning sold by the commercial division. This session was addressed by F. J. Marshall, commercial supervisor in Cleveland.

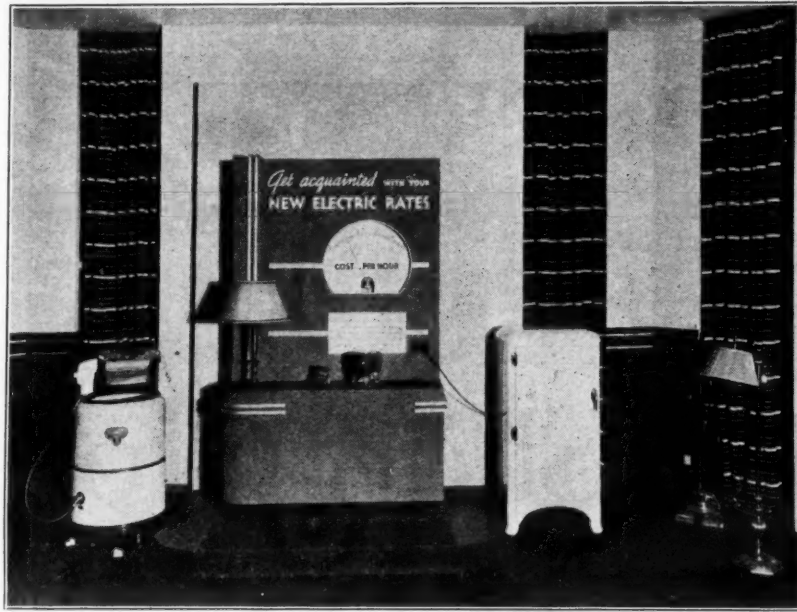
Mr. Marshall reported that the sales promotion material furnished by the factory was very helpful in selling commercial refrigeration during the past season. Particularly effective, in his opinion, were the direct mail campaign and "The Assistant," a portfolio of sales helps which the sales promotion division gets out regularly.

With respect to the small and medium-sized air-conditioning equipment which is sold by York's commercial division, Mr. Marshall pointed out the danger of slighting commercial refrigeration when the air-conditioning season becomes most active.

"Sell Commercial the Year 'Round"

"There is a tendency for salesmen to neglect commercial sales to sell air conditioning in the spring and early summer," he said. "Then when the air conditioning season is over, it takes about a month to regain momentum on commercial."

'Operating Economy'—Illustrated



Prospects can see just how little it costs to operate an electric refrigerator by glancing at the instrument above which was built especially for use at the recent National Radio and Electrical Exposition in New York City. Demonstration refrigerator used was a Leonard.

Solution to this problem lies in urging distributors and dealers to maintain a consistent volume on commercial, and in branch offices the appointment of salesmen to sell small air conditioning exclusively, just as is now done in large air conditioning, he believes.

Distributor and Dealer Schools

In the general discussion on the commercial division which followed, the need for distributor and dealer schools was brought out, and it was decided to hold some of them at key points throughout the country next year.

It was also decided to franchise additional distributors as required to cover the country next year, and expand the commercial divisions which have been established at main branches of the company.

In order to reach new markets, it was determined to add certain new low side equipment, not yet announced, which has been in the process of development for water and beverage cooling, ice making, etc.

Rosenmiller Talks

J. L. Rosenmiller, manager of the accessory equipment and supplies division, directed discussion on that division of the company. Speaker at this session was Roscoe Warnock of the Atlanta office.

Speaker at the industrial session was E. F. Edwards, sales manager of the St. Louis branch. In Mr. Edwards' opinion, industrial refrigeration is still the "backbone" of the company, and he strongly urged the assemblage to maintain the leadership which the York company has enjoyed in this field.

Sessions of the branch engineers were devoted chiefly to discussions of engineering policies and field practices, methods of standardizing York engineering all over the country, and to a thorough review of new developments for next year.

Various branch engineers reported field experiences of the past season for correlation and use by the factory, and an important phase of the program was detailed explanations of the factory's various research activities.

In York's test plant the engineers inspected the test set-up which has just been completed for rating condensing units under the new schedule of conditions and methods recently promulgated by the American Society of Refrigerating Engineers. This was fully explained to the branch men so they will understand its purpose and usefulness.

Those Present at Convention

Out-of-town men who attended the meetings included:

L. S. Davis, J. P. Hare and J. L. Ferran of Boston; F. A. Weisenbach, W. A. Pusch, H. V. Shipley, A. N. Barnes, S. J. Shipley, L. F. Bourgarde, J. V. Masterman, J. Anderson, L. M. McDewitt, J. Daube, R. C. Follett and M. Ulms of Brooklyn; H. E. Aughenbaugh, M. S. Lebar, C. P. Foley, N. E. Schwartz, W. K. Griggs, G. E. Tuckerman, C. R. Logan and John Ford of Philadelphia; John Schurman, H. L. Craumer, H. S. Yoder, F. J. Marshall, John Nielson, John A. Schurman and J. Scott of Cleveland; W. L. Hutton, E. F. Edwards, J. B. Breen and H. E. Miller of St. Louis; G. A. Westerlin and F. T. Brandt of Chicago; W. E. Becker, A. C. Edwards and E. W. Landa of Houston; M. M. Crout, R. L. Beach, G. H. Cress and Roscoe Warnock of Atlanta; R. H. Beck, F. W. Devers and A. J. Dalin of Los Angeles; R. McJannet and H. T. Orebaugh of Seattle; R. A. Stencel of Toronto; and R. V. Thomas of Canton, Ohio.

BOOKS

"Retail Selling and the New Order"

Author: Kenneth Collins. Publisher: Greenberg, New York City. Pages: 203. Price: \$2.50. Review by T. T. Quinn.

MOST people in retail selling need no introduction to Kenneth Collins. As publicity director of R. H. Macy & Co., New York City, he did a pretty good job of revising the whole pattern of America's retail advertising practices. At the present time he is assistant to Bernard F. Gimbel, president of Gimbel Brothers.

Mr. Collins believes that, as a result of the complete breakdown of our system of distributing goods, the retail merchant of today must immediately prepare himself for a new concept of retailing under the new order.

Writing informally, but with the frankness, wit, and insight which characterized his earlier book, "The Road to Good Advertising," Mr. Collins discusses every important job connected with retail selling. He is informal, without being over-intimate; he is frank and trenchant, without being unfair. On the whole, the book is a sort of personal interview with a man who is very much aware of what the retail business is all about.

From the day the Phoenicians piled the decks of their infant ships and sailed the seas of commerce, retailing has been a fairly personal thing, an exchange of goods between people, Mr. Collins says. The history of retailing, in essence, is a history of personal dealings. And it has been as good or bad as the persons who managed it.

Personnel Is Main Problem

The central problem in retailing, then, has been, and always will be, the problem of personnel. And the executive personnel of the department store, the author holds, has been, by and large, no more than mediocre.

In the new era, as Mr. Collins sees it, the retail business will attract large groups of intelligent men, who, disdaining the conventions which have in the past hobbled others of their caliber who sought to enter, will cut the knots of inefficient methods, of antiquated customs—and see their business, not as a collection of departments whacking away to get a day's business, but as an essential part of the economic structure. They will, in short, be as great as their jobs.

These jobs will bring out several old characters in new roles. The buyer (the most important person in a department store, Mr. Collins thinks) will be given freer rein, allowed to be a gambler, to play his hunches, to run his own show. For a good buyer likes people, likes to know what they want, how they think. He can be enthusiastic about his wares, in the department store of the future—and nobody will shut down on him.

The manufacturer will be allowed, and invited, to help the department store merchandise its goods. And who, asks Mr. Collins, knows more about how goods should be displayed, advertised, and sold than the man who makes them?

The merchandising man will do the simple, obvious things which must be done to send retailing along the broad highway of a more intelligent distribution of this world's goods, and not try to pose as a master mind. He'll plug his buyers' weak links, and be a sales promotion manager of merchandise,

just as the advertising manager is the sales promotion factor in the articulate publicizing of that merchandise.

For the non-department store executive reader, probably the most worthwhile parts of the volume are those in which Mr. Collins discusses that common and important problem, the conservation of advertising funds. These chapters alone make the book a valuable contribution to the literature of merchandising.

"Nearly every retail store in the country is spending far too much money for advertising," says the author. Why? For four principal reasons:

1. Wasteful methods.
2. Attempts to make advertising cover up the mistakes of management.
3. Experimentation with uneconomical forms of advertising.
4. Inadequate advertising personnel.

Wrong Items Advertised

Stores habitually advertise the wrong items, the author contends. Instead of seasonable, desirable items, they devote large space to slow-moving, non-traffic-pulling goods. No store can succeed unless it draws traffic to every department, every day. The best way to get this traffic is to advertise popular items.

Most advertising of a variety of items is trite. "A wide assortment of lovely, dainty . . ." what? Dresses, curtains, frocks, underwear—either may be added, at random. Typographic is often unspeakable. Hunches guide placement of copy. All these things reveal a sad lack of logical thinking. No one paper can cover all of a particular class of reader, Mr. Collins says, if it has a circulation of more than 50,000.

When sales came harder, stores began to expect their advertising departments to carry an intolerable burden—to bring up the volume of sales which had suddenly disappeared into nowhere. It wasn't until 1933 that they began to effect the operating economies which should have been made four years earlier. Even today, says the author, advertising is being asked to do too much. If advertising brings people into the store, it has done its duty. What happens after that is the responsibility of the management and the buying organization. No amount of advertising can successfully cover up faulty management.

New Media Must Be Studied

Radio, direct-mail, and other supplementary forms of advertising failed because those in charge of funds didn't understand the use of them, says Mr. Collins. Any use of a medium requiring a novel and different technique will be a waste unless it is made with a full knowledge of the problems involved, and a willingness to go through with the experiment until it has proved or disproved itself.

Last major waste in advertising money was in the employment of inadequate personnel. Inadequate, not from the point of quantity, but of quality. It was an easy matter for the advertising manager to get approval for three employees at \$35 a week—but just let him try to hire one at \$100! So, with lower quality workers, lower quality advertising was a natural and inevitable result.

What to do about this? Mr. Collins suggests a setting of the ratio of advertising salaries to 5 per cent of the dollar space costs of the store's advertising, and then, within a fixed dollar maximum for all publicity salaries, let the advertising manager pay any amount he sees fit. There would be a noticeable improvement within a month, he contends.

How to save advertising money? Mr. Collins suggests the following rules for the guidance of every advertising page that is issued:

1. It should be designed to attract a specific number of customers. All good stores know what the average response to a certain type of advertising will be. This average should be the goal.
2. Insist upon a probable dollar response quota for each page. This will give two yardsticks for each page: customers, and dollars.
3. Have every advertising page carry on it one continuing promotion. Get a following for a certain type of staple goods at a fixed price. This makes a certain amount of floor traffic almost automatic.
4. Have every advertising page carry some sort of institutional message. Make one element on the page significant and characteristic of the particular store it represents. It may be the method of copywriting, or the manner of typography, or the art layout, or a "first" of something or other.

Advertising departments must be retrained, Mr. Collins says, to a new and more businesslike approach to their jobs. Inordinate advertising expenses should no longer be tolerated. But the management must be contented with a slow improvement, toward a closer alignment of sales and advertising expenses.

The ratio of advertising expenditures to sales can only be justified at somewhere around 4 1/2 to 5 per cent. If it goes above this, there's waste, somewhere. And all such waste must go, if the store is to get along under "The New Order."

Salesmen Inspired by Cameron Sell \$15,912 Merchandise in Day

DETROIT—Salesmen for Caswell, Inc., Michigan General Electric distributor, set a new high record for one-day's sales on Oct. 29, when, under the temporary managership of Ralph Cameron, assistant general sales manager of G-E's specialty appliance department, they sold \$15,912 worth of appliances.

This is said to be the equivalent of two weeks' business, under ordinary circumstances.

Previous high for the Caswell organization was set in mid-September, under the pro-tem sales managership of A. M. Sweeney, manager of the sales division of the specialty appliance department. On that day \$7,800 in retail sales were recorded.

On "Cameron day," as it was called, Caswell's morning sales meeting was addressed by the temporary sales manager himself. A second meeting, at 10 o'clock that night, gave salesmen a chance to report the results of their efforts during the day.

High individual salesmen for the day, it was announced, will be the guest of Mr. Cameron during the 1936 Toppers' convention in Cleveland next January.

Costs of Business Cars Studied in Survey

NEW YORK CITY—Some of the plans and policies resulting from the problem of establishing effective control of the operations and expenses of automobiles used on company business are detailed in a recently released report of the Policyholders Service Bureau, Metropolitan Life Insurance Co., entitled "Controlling Costs and Operations of Business Automobiles."

This study considers such subjects as: Should the company or the employee own the car? In what form should reimbursement for expenses be made? What are some of the predominant policies with relation to financing new cars, insurance, trade-ins, personal use of cars?

The survey disclosed that opinion and practice concerning whether business cars should be company or employee-owned are about equally divided. It disclosed also that there are three major methods of reimbursement for expenses: (1) company repays actual expenses; (2) company extends a flat allowance fixed either on the basis of mileage, or time; and (3) company establishes a sliding scale with variations in rate depending upon differences in distance traveled, in territories, or in types of road.

The first of these three methods generally is used by companies whose policy dictates company ownership; 17 of the 18 companies reporting in detail on this point used the actual expense method. The other two methods apply in companies in which the employees use their own cars on company business. Details of the flat and scale allowances are given in the report, broken down for type of industry.

Advertising Manager for Dayton V-Belts Honored

KANSAS CITY, Mo.—Ray L. Wetzel, director of advertising for the Dayton Rubber Mfg. Co., makers of V-belts, was one of the principal speakers at the annual convention of the Direct Mail Advertising association held here recently.

The advertising association's invitation to speak came as a tribute to Mr. Wetzel for having produced one of the best direct mail campaigns of the year. His campaign won the Direct Mail Advertising association award as one of the fifty outstanding campaigns of 1935, a contest in which approximately fifteen hundred leading manufacturers and agencies were striving for the fifty prizes.

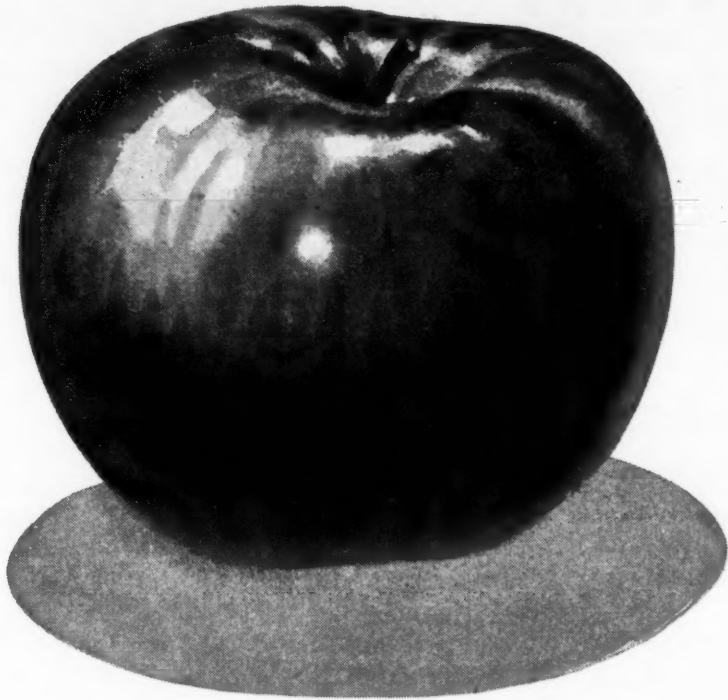
Hendrickson Named Mills Novelty District Manager

CLEVELAND—E. J. Hendrickson, formerly general manager of the Midland Radio Co., Cleveland radio distributor, has been appointed Ohio district sales manager for the Mills Novelty Co., Chicago. His headquarters will be at Columbus, Ohio.

Operations to be supervised by Mr. Hendrickson will cover automatic ice cream freezers, air-conditioning equipment, automatic coin-operated phonographs, and scales.

Hecht to Direct Appliance Sales in Baltimore Store

BALTIMORE—Henry Hecht has been appointed merchandise manager for the refrigeration, electric appliance, and radio departments of The Hub, department store here.



Good to look at . . .

BUT WHAT OF THE CORE?

Be it apples or motor cars, watches or refrigerators, a beautiful exterior may hide the seed of decay within.

Fine and flowery sales effort has often put over such products for a considerable length of time. But gradually, as the seed of decay or failure develops, a good name eventually becomes a bad name and the faulty product, and sometimes the producer, disappear. The Consumer pays in the first period, but the seller pays eventually.

and if it's insulation

In the core of an electric refrigerator is the cabinet insulation. Without permanently efficient insulation, a fine compressor or machine unit is of little permanent value to the owner.

If the insulation will not withstand the penetration of water vapor—in- evitable in spite of "moisture seals," the advertised economy of the electric refrigerator soon disappears and it becomes an extravagance to operate.

Put it another way: Insulation must have qualities which assure permanent low operating cost. Dry-Zero Insulation was scientifically developed for this exact purpose.

Dry-Zero Insulation can save from 30 cents to \$2 a month in running costs.

Dry-Zero cuts operating costs simply because the motor uses fewer k.w.h. per 24 hours. And this in turn is the direct result of Dry-Zero's qualities—its high insulation efficiency plus its unique ability to resist destructive moisture that gets into the walls of refrigerators in use.

True, this saving of 30 cents to \$2 in running costs goes into the pockets of the buyers, not yours. But you get other dollars in return. You get extra dollars in good will, in a stronger selling story, in a lower complaint list, in repeat sales, in building up your business on a solid permanent basis.

To find out the exact effect of Dry-Zero Insulation in a modern electric refrigerator, exhaustive tests were made with many refrigerators. The results of these tests are available for your analysis. You are invited to ask for the report entitled, "Effect of Insulation on Refrigerator Operation."



DRY-ZERO
REG. U.S. PAT. OFF.
THE MOST EFFICIENT
COMMERCIAL INSULANT KNOWN

Dry-Zero Corporation, 222 North Bank Drive, Chicago
687 Broadview Ave., Toronto

ELECTRIC REFRIGERATION NEWS

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VOL. 16, No. 10, SERIAL No. 346, NOVEMBER 6, 1935

Playing Santa Claus To Customers

PREMIUMS, as a merchandising method, are frequently frowned upon by men who make it their business to issue pronouncements upon the ethics of mercantile activities. Nor can it be denied that a really good salesman seldom should need the assistance of a premium—which is simply another way of cutting the price—to close the order.

On the other hand, supporters of the use of premiums as a merchandising method can point out that it works. Numerous stories of the success dealers have had this year by offering a food mixer, toaster, or other small appliance with each refrigerator sold have appeared in recent issues of ELECTRIC REFRIGERATION NEWS. Proponents of premium selling can draw a parallel between their situation and that of coin-meter merchandising—which also was frowned upon by the "ethical," and which also proved to be highly successful.

Now Is The Time

Whichever side of the argument one may take, it does seem logical that if a dealer is ever to make use of a premium deal, the coming weeks will be the time to do it. The institution of giving Christmas presents to one's relatives, friends, associates, and benefactors is both ancient and honorable. Even the strictest observers of "ethical" procedure indulge in the custom. And so, why not give Christmas presents to one's customers?

Every sales drive is predicated upon some special inducement: price, terms, new model or new gadget, premium, contest, or whatnot. Should it not seem logical that a premium—or Christmas present—to the buyer of a refrigerator would be a most fitting inducement for a Yuletide sales drive? Advertising messages could be built around a "Let Us Play Santa Claus to You" or "We Want to Give You a Christmas Present" theme; and under such favorable circumstances much of the onus and suspicion which would normally attend a something-for-nothing scheme or "free deal" might not be aroused.

Give Refrigerator Accessories

What should this "Christmas present" be? The NEWS is inclined to the opinion that it would be most fitting and proper to give a refrigerator accessory, such as a set of special refrigerator dishes, a small ice cream freezer to fit into the evaporator, especially designed containers, water jugs, trick shelf arrangements, egg racks, and the like. These accessories not only can be obtained at small cost to the dealer, but will help make the customer a better user (and hence a better booster) of the electric refrigerator he buys.

Naturally this "Christmas gift" idea will not be the basis of the selling arguments which dealers and salesmen use in making their presentations. The convenience, economy, and health protection arguments which form the

standard presentation are just as important in Christmas selling as they are at any other time. But the salesman can point out that the down payment on a good refrigerator is less than the cost of almost any other substantial present the head of the household could make to his family, and that it is a gift of which the whole family will be proud and which the whole family can use.

Kill Two Birds with One Stone

Furthermore, most families expect to buy an electric refrigerator "some day," if they do not have one already. So the "eventually—why not now?" appeal should be good. If the head of the house is going to buy a modern refrigerator "some day," why not kill two birds with one stone, and buy one as a Christmas present? By presenting his wife and family with an electric refrigerator for Christmas, the breadwinner can purchase his "some day" refrigerator and his "must buy now" Christmas gift with one and the same expenditure.

It should be noted that a Christmas-gift refrigerator will be immediately useful. The Christmas holidays are a time of big dinners, of visits from relatives and friends, of homecomings of students, of celebratory feasts of all descriptions. The woman who has to prepare these dinners will appreciate the efficient assistance of a modern electric refrigerator during those rushed days more than at any other time during the year—unless she's a farm wife and has to feed the threshers at harvest time.

Winter Selling Arguments

Food bills are generally higher in winter than in other seasons of the year. This winter they are apparently going to be higher than they have been for a long time. The savings and economies which can be effected with an electric refrigerator of ample capacity (by quantity purchases, taking advantage of bargain sales, and by elimination of food wastage and spoilage) should be especially welcome this winter to all families which are watching their expenditures closely.

Colds, coughs, and diseases of all kinds are more prevalent in winter than in summer. During cold spells it pays especially well to take every precaution in protecting a family's health. Well-kept food is one of the important precautions and means of protection. Reducing the number of times the housewife has to slush around in the cold air and snow (with the larger sizes of refrigerators, shopping trips can be cut to the minimum—a week's supply of perishable foods can be purchased at one time) cuts down the number of dangerous exposures to which "mother" must be subjected. Money saved on doctor's bills by an electric refrigerator may far overshadow the cost of the refrigerator itself.

These are but a few of the effective arguments which salesmen will use in selling electric refrigerators during Christmas drives this season. Smart dealers will assist these salesmen to gain a hearing by special advertising and promotion. The NEWS respectfully submits as its suggestion for 1935 Christmas selling campaign promotion: Play Santa Claus to Your Customers—give each one a "Christmas present" of a useful refrigerator accessory.

WHAT OTHERS SAY

Minimum Price Fixing

THOUGH it is now legally permissible in a number of states for manufacturers and retailers to agree on fixed minimum prices, there is still great reluctance on the part of retailers to resort to this practice. That minimum prices have been used beneficially in some instances cannot be denied, but the problem is far from simple. Perhaps the greatest hazard in fixing minimum prices is the competition that this automatically invites from the chain stores.

Another criticism of fixed prices is that they place the major selling emphasis on price rather than value, thus leaving the legitimate merchant at a great disadvantage with unscrupulous underselling competitors. What is necessary, obviously, is to teach consumers, through advertising and promotion, that surface appearances may be misleading. Of course, this requires more ingenuity than competition on a price basis. Nothing is so easy as cutting prices and, at the same time, diluting quality. But the merchant who stresses good quality, and delivers it, is making more than just a sale. His advertising has created a customer and, if the quality is good, a lasting one.—*Advertising & Selling.*

LETTERS

Extend the FHA?

Raymond Rosen & Co.
32nd & Walnut Sts., Philadelphia
Editor:

For the benefit of the appliance industry at large, I think it would be well to call to the attention of all interested parties, the fact that modernization loans under the National Housing Act will not be available after April, 1936.

It is generally conceded that this plan of merchandising has done a tremendous amount of good for trade, and it behooves us all to take some steps in an attempt to arrange a continuance of the so-called FHA plan.

I enclose, herewith, copy of letter received today from the Federal Housing Administration in response to a statement I sent them outlining our gratification for all the FHA had done for us. It might be well to publish the letter in an attempt to arouse the industry.

ALBERT J. SLAP,
General Sales Manager.

(The following is the letter which Mr. Slap received from the FHA.)
Federal Housing Administration
1607 Fidelity-Philadelphia Trust
Philadelphia, Pa.

Mr. A. J. Slap,

It is with a great deal of pleasure that we acknowledge receipt of your letter of the twenty-second.

We are naturally endeavoring to do a good job, and while we may feel a degree of satisfaction as we observe the mounting totals of our modernization loans, and visualize the benefits, comforts, and conveniences that have been provided thousands of our citizens, it is difficult to inject into this satisfaction that glow of warmth and encouragement that is lent to our work by just such letters as yours of the above date.

Please be assured that we prize and appreciate expressions of this character, and we trust that the agency of the National Housing Act as exemplified by the Federal Housing Administration, will continue to lend energy and stimulation to your business and industry in general.

You, no doubt, are cognizant of the fact that modernization loans for the National Housing Act will not be available after April, 1936, but we are hoping that further extension may be granted, and that this will only be accomplished by strong and convincing evidence of the need for such extension.

Your company, occupying a commanding position in your particular industry, may be one of many able to supply the reasons and the need for this extension.

Many thanks to you and your organization for the splendid cooperation given our program and best wishes for your continued success.

A. N. FEW, Associate Director.

Revenuers at It Again

Federal Refrigerator Corp.
57 East 25th St., New York City
Editor:

Please rush a copy of the ELECTRIC REFRIGERATION NEWS in which the editor discussed the Excise Tax on Reconditioned Refrigerators. It is a matter of great importance to us and also to the individuals who are concerned with that phase of the refrigeration industry.

The government at the present time is checking all reconditioned refrigerators sold in this territory. Any information that you may have will be greatly appreciated. Kindly rush the ELECTRIC REFRIGERATION NEWS to us by return mail.

JOHN M. BESS,
General Manager.

Answer: Information on the excise tax was published on page 1 of the Aug. 21 issue this year. The June 29, 1932, issue also carried valuable information on this subject.

Meeting Attendance List

The Electrimatic Corp.
2100 Indiana Ave., Chicago
Publisher:

We wish to take this means of expressing our appreciation for the hospitality and friendship accorded the manufacturers and distributors during the recent convention of the R.S.E.S. We are sure it will always leave a feeling of gratitude for ELECTRIC REFRIGERATION NEWS.

We would appreciate a list of jobbers and manufacturers that were in attendance, if this is available from your records. However, if you have a complete list of distributors nationally, this will be more desirable.

H. S. DEKKER, Sales Division.
Answer: Lists of manufacturers and supply wholesalers in attendance at the meetings were published in the Oct. 30 issue of the NEWS.

Has Uncle Sam Quit Paying His Bills?

Federal Coordinator of Transportation
Section of Property & Equipment
Washington, D. C.
Oct. 17, 1935.

Editor:

This section is engaged in a study which seeks to determine the potential field of a freight container service, if instituted on a national scale with equipment interchangeable between rail and highway vehicles.

It follows that a great many of the commodities, which are adaptable to shipment by this means, must move with protection from heat and cold. We are interested in devices and materials, manufactured or assembled, which will withstand the conditions coincident with rail and highway transport.

It has been brought to my attention that you have two publications, namely, REFRIGERATION AND AIR CONDITIONING MARKET DATA and REFRIGERATION AND AIR CONDITIONING DIRECTORY. I believe that these catalogs will materially aid us in directing our survey into the proper channels. If you so see fit, we will greatly appreciate your cooperation in furnishing us this material.

R. C. KING,
Assistant Director.

Answer: Replying to your letter of Oct. 17, we are pleased to know of your interest in the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY and MARKET DATA BOOK.

You will find a complete description of the contents of these two books on the enclosed leaflet. Their cost is \$3.00 each or \$5.00 for the set of two.

We greatly appreciate your interest and will be pleased to receive your order.

Subscription Manager.

Federal Coordinator of Transportation
Washington, D. C.
Oct. 30, 1935.

Editor:

I have your letter of Oct. 24 and regret to say that although I greatly feel the need of your publications, our budget here is so limited as to prohibit the purchase of this most desired information.

As was disclosed in my previous letter we are making a survey of the current manufacture of insulation and refrigerated units for use in freight containers. I am sure after reading the descriptive bulletin on these publications that this information is greatly to be desired.

If you can not see fit to supply us with these copies maybe you can inform me where there is a set in Washington which I can use, or better still perhaps you would be so kind as to loan us a set for the duration of our study.

R. C. KING.

Answer: Judging from the number of letters we have received from various departments of the government requesting free copies of the DIRECTORY and the MARKET DATA BOOK, the refrigeration industry is being very thoroughly investigated and analyzed. We are interested to know about these activities and trust that some good may come from them. We see no reason, however, why the government cannot pay the nominal price of these books the same as any other subscriber, considering the fact that this company is paying its share of government cost in the form of taxes. It appears that the government has no hesitancy in squandering millions of dollars in all sorts of questionable make-work activities but balks at paying a fair price for a worth while service offered by an independent publisher. The fact of the matter is that we have filled several orders (apparently bona fide) from governmental agencies but our invoices have not been honored by payment.

Publisher.

Read on Arrival—in Japan

Refrigerator Division
Hitachi Seisakusho,
Sukegawa, Ebaraki-ken, Japan
Editor:

The writer was one of subscribers to the ELECTRIC REFRIGERATION NEWS as far back as in 1927 while in your country, until about a year ago this November, when I left my last residence at White Plains, N. Y.

Since my return here, I was looking for your NEWS in this country, but none of the book sellers had any of the NEWS, and early this summer, I asked the Hitachi Ltd., with whom I am now connected as a consultant refrigerating engineer, to get one for the engineering department.

The first group of them has just arrived, and you can imagine how much absorbed I went over them. Here is one tip for you, although I believe you have found it by now, that is—in your last July 17 issue, on page 17, the Fedders automatic expansion valve is in the wrong place for the Detroit Lubricator valve.

I am glad to be able to get in touch with the news of old time friends and movements of the refrigerating industry in your country through the NEWS. The engineering news in domestic and commercial refrigerating fields particularly interest me.

KOKICHI OKADA.

Sales Idea of the Week

By V. E. (Sam) Vining, Director of Department Store Sales,
Westinghouse Electric & Mfg. Co.

Back in my home town, when I was a kid, we had a Methodist minister who had a passion for trading horses.

Was he socially ostracized? He was not.

Before he accepted the responsibility of the church, he preached a trial sermon in which he confessed.

Said he:

"I hope I am a Godly man. I pray that in coming among you I be permitted to be of service. I have a weakness, however, which I hope you will bear.

"A horse trade with me is no 'business transaction'—it's a 'Game,' and may the devil take the complainin' loser."

The eye of every Deacon and half the male congregation lighted in anticipation, as each man blessed the shade of John Wesley for sending him a new victim.

The "Victim" moved to town the next week and the fun started. He arrived with a delightful wife, two kids, and a string of fourteen leather bags filled with bones, that passed as horse flesh merely because they moved more or less under their own power.

Sundays he preached the most humanly powerful sermons ever heard in our village. Under his direction "prayer-meetin' night" took in a new meaning. In the sick room, in time of trouble, his broad shoulders were a tower of strength and his kindly eyes were always lights of hope and builders of faith.

He was the business confidant of the town. The weak leaned on him—the strong asked his advice. Even kids liked him and trusted him with their secrets, and ran to him with their tragic little problems.

But a horse trade—that was a different story.

The whole town watched every transaction. They chuckled as they saw his string of "crow-bait" gain in respectability and value; and occasionally, when he got the worst of it, they laughed loud and long—not at him, but with him, for he himself laughed loudest of all.

Preachin' and horse-tradin', they don't seem to fit—

Yet, in the hands of a master, the horse-tradin' was as much responsible for results obtained as was the preachin'. It brought him to a common level with the people he hoped to influence, and no man can preach an effective sermon, or work with his fellow men—or close a sale—from a pedestal or a pit. You've got to take 'em as you find 'em—talk with 'em, not at 'em.

McGinnis Finds Sales-Clinic-on-Wheels Such a Good Volume Producer That Salesmen Try To Pay Him for Assignment to It

CHICAGO—When a dealer can get his salesmen to pay him for the privilege of selling refrigerators, that's news! And that's just what has happened to Dale T. McGinnis, Norge dealer here, when members of the alternating sales crew on his Norge household clinic-on-wheels offered to pay to be given extra time selling in the coach.

Purchased to replace a discontinued branch office, the display-on-wheels has been an outstanding producer. In one month, during the 19 days that the car was on the street, 43 units were sold, and 250 prospects secured. Seven of these prospects were sold on the first call back.

Prefaced by advance publicity with a direct consumer mailing in the form of an invitation to view the coach, this showroom on wheels is sent to a particular street in a scheduled neighborhood area. While the crew manager waits, four salesmen call at all homes in the neighborhood and invite housewives to see the exhibit.

When the prospects arrive, the salesmen and manager are prepared to give a complete and thorough demonstration of the Norge Rollator

refrigerator, washers, and ranges. Sales are made in the clinic; the whole selling job is complete at one time from canvass to closing.

Crews are changed three times daily; those who were on duty in the clinic go on with their other work of canvassing, demonstrating, and closing for the balance of the day. A new crew takes over the clinic in the morning, afternoon, and evening.

"This clinic offers a highly satisfactory method for training and enlisting good salesmen," says Mr. McGinnis. "They are given a base to work from, they're not left to work out their own destinies, and they work alongside experienced veterans," he continued.

Another advantage of this clinic is that it gives an opportunity for "selling up," Mr. McGinnis believes.

"No single sale has been made from this clinic at less than full list price," the Norge dealer claims.

"Price cutting is a forgotten evil. Chiseling is eliminated when men are out getting business instead of waiting to grab a sale that someone else has developed. They're out selling a value, and they get paid for value received."

Effective Advertising in Small Store on Side Street Puts Dealer over Year's Quota by Mid-Summer

SPRINGFIELD, Ill.—Although operating narrow, unpretentious showrooms in an out-of-the-way location, Paul Bogan, Inc., new Westinghouse dealer here, used advertising and display features so effectively that he sold his whole year's refrigerator quota by mid-summer.

With the advent of the selling season, Mr. Bogan supplemented a giant electric sign, installed when he took over the location in February, with a banner stretched across the street, proclaiming "Westinghouse refrigerators—15 cents per day—five year protection."

Newspaper and radio advertisements carried his message to all residents of Springfield and the nearby trade territory; and a new striped awning, let-

tered "Westinghouse," invited passers-by across the street to come over and visit the "streamline store."

The Bogan salesroom is smallish, conservatively decorated, and displays a cutaway unit and a complete line of refrigerators. All this ties in with the national advertising campaign by blow-ups of national ads, tacked on the walls. Show windows are trimmed with current displays, sent out by the factory.

Ten salesmen comprise the Bogan selling force—five working on refrigerators, and five on other Westinghouse appliances. All the men are given intensive training on Westinghouse features before being sent into the field to canvass, follow user and other leads, and sell.

F-M Stockholders Will Vote Recapitalization

CHICAGO—Stockholders of Fairbanks, Morse & Co. will meet Nov. 20 to vote on a proposed recapitalization plan to pay preferred dividend arrears and place common shareholders in a position to share in earnings at an earlier date.

Robert H. Morse, president, states that the proposed plan provides that each share of 7 per cent preferred stock to be exchanged for one new 6 per cent convertible share, one common share, and \$2 cash.

Common stockholders will retain the same number of shares they now hold. Cash and common stock to be issued to preferred stockholders will be in payment of dividend arrears which will aggregate, \$1,608,547 or \$25 a share on the 65,657½ shares outstanding as of Dec. 1.

Approval of two-thirds of each class of stockholders is necessary for adoption. No opposition is expected, Morse said.

Westinghouse Profit for 3rd Quarter \$2,557,452

EAST PITTSBURGH—Net profit for Westinghouse Electric & Mfg. Co. for the third quarter of 1935 was \$2,557,452 as against a net loss of \$332,062 for the same period last year.

Orders received during the quarter ended Sept. 30, 1935 were 21 per cent higher than for the same quarter in 1934. Sales billed were up 24 per cent in 1935.

Comparative figures for the two nine-month periods show a net profit of \$8,822,640 in 1935 as against a net loss of \$363,787 during 1934. Orders received during the 1935 nine-month period were 20.7 per cent higher than during 1934; and billings were up 32.9 per cent.

TEMPRITE records are full of convincing examples of additional refrigeration equipment purchased after Temprite Beer Cooler was installed.

This additional equipment was bought because Temprite pioneered the owner into mechanical refrigeration and, by its successful and satisfactory operation, gave him confidence to travel the whole way.

To operate Temprite, a compressor had to be purchased—

Keg storage refrigeration followed—

Back-Bar refrigeration was required as business increased.

Water Cooling—Food Display—Chef's Box, were soon demanded by a number of the more successful owners and a goodly percentage of these installed Air Conditioning equipment.



Here is a glorious opportunity to tap a profitable market with Temprite as the spear-head of attack.

TEMPRITE PRODUCTS CORPORATION
1349 EAST MILWAUKEE AVE. DETROIT, MICHIGAN
ORIGINATORS OF INSTANTANEOUS LIQUID COOLING DEVICES

Never have Universal Cooler Condensing Units been in greater demand

★ Today, a complete line of standard units from ¼ to 15 h.p., properly designed for all types of refrigeration, are available to manufacturers of fixtures and the country's leading refrigeration engineers.

For example, Model W-1502 water cooled model portrayed below has an outstanding record of success in the smaller meat markets. In many such installations it handles the entire load of both cooler and counters.



MODEL W-1502



UNIVERSAL COOLER CORPORATION

DETROIT, MICHIGAN

BRANTFORD, ONTARIO

MANUFACTURERS OF A COMPLETE LINE OF HOUSEHOLD AND COMMERCIAL REFRIGERATION

AIR CONDITIONING

21 Air Conditioners Sold in Milwaukee in 9 Months

MILWAUKEE—Installations of air-conditioning equipment in Milwaukee, down to nine for the first six months of 1935, rose to a new high record of 21 in the first nine months of the year, according to a tabulation for the city just completed by Milwaukee Electric Railway & Light Co.

The total of 21 for the first three-quarters of this year passes by three the 18 recorded last year, when a new high mark was established. According to the utility's compilation, there are now 67 installations of air-conditioning equipment in the city.

Leading this year's installations in number, but not in tonnage, are six applications made in private offices in Milwaukee. Total horsepower in this classification is 14½.

In point of size, the high mark for the year is established by conditioning of the guest rooms in a large hotel, totaling 135 hp.

Next in number to offices are apparel stores throughout the city. Four installations in this type of business places are recorded, totaling 69 hp. Close behind are three classifications, each of which reported three installations. They are office buildings, with a total of 75 hp., taverns and cocktail bars, with 17½ hp., and individual

rooms in private homes, with 7 hp.

The four apparel store installations so far this year marked a notable advance in that field, since but one similar application had been made in the city previous to that time. In like manner, the three tavern installations were one more than the total made in all years before this one. The hotel guest room application this year marks air conditioning's initial advance into that field.

While the number of the city's air-conditioning installations was on the increase, average size of the jobs, in horsepower, was declining. This is typical of most cities in the United States in recent years, and is indicative of a trend encouraging to the industry, namely, that air conditioning is finding increasing acceptance in small businesses and private homes.

Actual decrease in average size of the city's air-conditioning installations may readily be seen from the following table:

	No. of Installations	Total Hp.	Average Hp. Per Installation
Prior to 1935	46	2,297.5	49.9
First 9 Mo., '35	21	328	15.6

Air-Cooling Installations in Milwaukee, Wis.

Type of Establishment	Prior to 1935 No.	Prior to 1935 Hp.	First 9 Months, 1935 No.	First 9 Months, 1935 Hp.	Total No.	Total Hp.
Theaters	8	1,600	—	—	8	1,600
Office Buildings	1	300	3	75	4	375
Office Space	9	16.6	6	14.5	15	31.1
Hotels—Dining Rooms	2	115	—	—	2	115
Guest Rooms	—	—	1	135	1	135
Apparel Stores	1	3	4	69	5	72
Food Stores	2	10.5	—	—	2	10.5
Restaurants	4	75	1	10	5	85
Recreation	1	40	—	—	1	40
Taverns	2	11.75	3	17.5	5	29.25
Furnish Parlor	5	46	—	—	5	46
Banks	1	50	—	—	1	50
Brokerages	1	6	—	—	1	6
Residences (Complete)	3	13.5	—	—	3	13.5
Residences (Individual Rooms)	6	10.1	3	7	9	17.1
Total	46	2,297.5	21	328	67	2,625.5

Rich's of Atlanta to Condition Air in Entire Store as Part of Expansion Program

ATLANTA—Rich's, Inc., local department store, is preparing to spend \$350,000 in an expansion program which will include air conditioning of the entire store, addition of another floor, and a recreational roof garden, and installation of two new elevators.

"Of the things to be done," said Walter H. Rich, president of the company, "one of the most important and outstanding is the equipping of the entire store, from basement to

top, with the latest and most improved method of year-round air conditioning."

The addition of another floor and the recreational roof garden, he said, will make available the sixth floor for expansion of merchandising, particularly house furnishings and service facilities, including auditoriums and meeting rooms.

An additional ladies' rest room, air conditioned and equipped in modern style, will be included in the program.

Willis H. Carrier Will Tour Tropics on Air Conditioning Survey

NEWARK—Convinced that air conditioning can help lift the "white man's burden" in many of the world's tropical countries by improving living and working conditions, Willis H. Carrier, board chairman of Carrier Corp., will embark this month on an extensive business tour to survey the progress of air conditioning in important lands in the equatorial zone, with a view to intensifying the development of air conditioning that is particularly adapted to foreign application.

Mr. Carrier will visit South Africa, India, Siam, Java, and the Philippines, possibly extending his trip to Australia and New Zealand. He will confer with officials of the Carrier affiliated companies which have been established in many of these countries, and exchange views with engineers and technical societies on the latest strides which air conditioning is making in the United States and abroad.

To Inspect Gold Mine

In Africa, Mr. Carrier will inspect the world's largest air-conditioning system, which he designed for Robinson Deep Gold Mine on the Rand where 400,000 cu. ft. of conditioned air will be supplied to miners working over 8,000 ft. below the earth's surface.

Upon his return to the United States in the spring, Mr. Carrier will present a paper before the American Society of Heating and Ventilating Engineers on the economics of deep mine conditioning based on the first-hand studies of this project. He hopes to gain information that will have a bearing on deep mine air-conditioning problems in this country and in South America.

Market in Hot Countries

Mr. Carrier believes that the potentialities of air conditioning in hot countries are so immense that a more careful study of its possibilities will lead to a broadening of the export market for American manufacturers.

Already many important key installations have been made, such as the Secretariat of New Delhi, India, textile mills in India, the Chalmers Krung Theater, Siam, and the living quarters of Siam's ruler, Mr. Carrier pointed out.

Business offices and hotels in China, the palace of the Maharajah of Jodhpur in India, office buildings and department stores in Japan are other evidences indicating the spread of the air-conditioning idea. The largest air-conditioned apartment house is in Buenos Aires, and the largest air-cooled hospital is in Mexico City, while the world's smallest air-conditioned theater is located in Rio de Janeiro, Brazil.

Will Aid Engineers

"I believe that a first-hand knowledge of the special conditions which confront engineers in tropical countries will enable us to design equipment that will stimulate the already extensive use of air conditioning abroad," Mr. Carrier states.

"We have much to learn from foreign engineers and they can learn much from us respecting the latest applications of air conditioning in this country. The purpose of this trip is to investigate conditions in a broad way to determine how we can most effectively cooperate with each other in making air conditioning world wide."

Schoolroom Conditioner Introduced by Trane

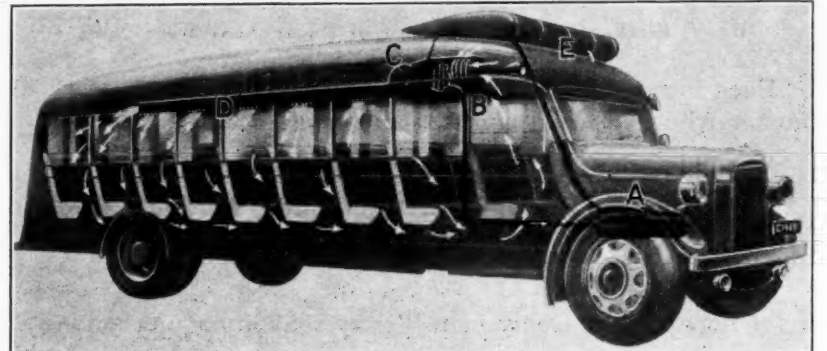
LA CROSSE, Wis.—Introduced by the Trane Co. here is the Air-O-Lizer, a compact unit for schoolroom air conditioning, in which direction flow grilles make it possible to turn the heated air into the room in any desired direction, so that windows and wall spaces are curtailed with heat. The grille which serves this purpose is at the top of the unit and is composed of three sections—the main or central section, and two smaller end sections. The two end sections may be turned to any angle to control the flow of heated air.

Other features contained in this unit are ventilated pipe spaces which prevent freezing, and increase the efficiency of the unit ventilator, and balanced aluminum dampers which require a minimum of power for operation. These dampers are one-piece, light-weight, and lined with felt.

Use of multiple fans, the shafts of which are full-floating mounted, aid in the elimination of noise and vibration. To further eliminate noise, the motor and power unit are on felt.

The cabinet is designed so that the whole interior of the unit may be exposed by removing the one-piece front and top panel. The entire cabinet consists of four pieces—the top and front panel, and the two ventilated pipe spaces. These are readily removable without the use of tools; installation is thereby simplified.

Cooling System for Bus



Here's how the bus system works. Compressor (A) driven by car engine supplies refrigerant to cooling coil (B) provided with intake and filter for outside air. Fan (C) draws air over coil where it is cooled and dehumidified, then distributed throughout car by duct (D). Outlets in bottom of the duct diffuse conditioned air (shown by arrows) downward over passengers. Condenser cooling coil (E) on roof, removes heat extracted from vehicle and dissipates it to outside atmosphere.

Water Employed for Cooling & Heating in Miller 'Conditionair'

LOS ANGELES—Miller Conditionair, Inc., has recently brought out a unit air conditioner adaptable to year-around conditioning work, and needing only electrical outlet, hot and cold water supply, and drain connections for its installation.

The Conditionair is intended for use in homes, stores, and offices, and will operate efficiently in rooms up to 8,000 cu. ft. It circulates 300 c.f.m. of air, keeping it in motion in all parts of the room.

In winter, the unit is simply connected with the hot water supply, no special boilers being required. In summer, cold water from any source is sufficient to lower the temperature to within a few degrees of water temperature, it is said.

Fresh air is drawn in from out of doors, through any window, door, or other convenient outlet, circulated over pipes cooled (or heated) by constantly running water, and forced into the room by a centrifugal fan driven by a 1/20 hp. water-cooled induction motor.

The air is washed by circulation through a fine spray, and in addition is filtered through a heavy wool filter containing 20 pockets.

Efficiency of the unit is such, it is claimed, that it uses only 15 gallons of water per hour, at an estimated cost of \$1.25 per month.

The unit weighs 75 lbs., and is 13 in. wide, 12½ in. deep, and 34 in. high.

A special arrangement makes it possible to circulate benzoin, menthol, a deodorant, disinfectant, or any other medicant throughout the room with the unit. This has been found effective for the relief of asthma, colds, and other respiratory ailments.

Joseph H. Miller, designer of the Conditionair, was at one time assistant attorney general of New York State. Later he was an instructor in engineering at University of California.

Orrin A. Brandel, director of sales and engineering, is also associated with Gillfillan Bros., Inc., here.

Offices Empty for 8 Years Leased as Conditioners Were Installed

CHICAGO—Air conditioning means money in the pocket when it comes to leasing space, owners of the Morton Building here have found. The second floor of the Morton Building was unoccupied for a period of eight years, but was immediately leased when air conditioning was installed.

Complete year-round air-conditioning systems for the second and third floors of the building were designed and installed by the Kroeschell Engineering Co. of this city.

Two large carbon dioxide Worthington refrigerating plants, located in the basement supply refrigeration during the summer. Each floor is equipped with a separate air conditioner and duct systems especially designed to fit the limited spaces available on each floor.

One result with which the management is particularly pleased is that it allows the windows to be closed at all times, eliminating the noise of elevated cars, street cars, automobiles, and other outside noises.

Baltimore Drug Chain to Open 13th Cooled Store

BALTIMORE—Apparently not superstitious, the Read Drug & Chemical Co., local chain drug store operator, will put its thirteenth air-conditioned store into operation when it opens its new air-conditioned branch store here early in November.

Installation of equipment will be made by Air Conditioning, Inc., Carrier distributor for this territory.

Air-Conditioning System Is Developed for Busses By Houde & Carrier

(Concluded from Page 1, Column 3)

and E. P. Heckel of Chicago, vice president of the Carrier Engineering Corp., air-conditioning specialists.

While stressing the fact that commercial production of these systems has not been started, it was indicated that recent engineering development has proved the entire feasibility of the principle. Research on the new system has been in progress for more than a year. A standard 5-passenger automobile was used as a proving ground for the development of the system. This vehicle has been in almost continuous service throughout the past summer.

The system described to the bus operators calls for the use of a refrigerating compressor driven directly by the car motor which supplies a special refrigerant to an evaporator or cooling coil located within the vehicle. A small fan draws air over the cooling coils and circulates it throughout the vehicle while at the same time drawing in sufficient outside air to provide ample ventilation for the dilution of smoke and odors. The air is filtered to remove dust.

The refrigerant, which is the same as that used for buildings where large numbers of people congregate, is harmless, non-inflammable, and non-explosive. Function of the refrigerant is to extract heat from the vehicle by cooling and dehumidifying the air drawn over the cooling coils.

After it has done its work, the refrigerant is cooled in a condenser which is located on the roof of the vehicle, in the case of a bus. The movement of the car provides a sufficient flow of air over the condenser coil to dissipate the heat which has been removed from the vehicle by the refrigerant.

The authors of this paper indicated that a bus seating 32 to 35 passengers, having a cubical content of 1,200 cu. ft., will require 5 tons of refrigerating capacity. This is about 40 per cent less than is required for a railroad car.

Approximately 1,500 cu. ft. of conditioned air per minute would be circulated in the bus, or about 50 cu. ft. per passenger. Twenty-five per cent of the air would be drawn in from outside to provide ventilation.

The design is such as to provide a dry-bulb temperature within the vehicle of from 10 to 15° F. below outside temperature conditions.

Distribution of the conditioned air in the bus may be accomplished either by a short length of duct along each side or down the center aisle at the ceiling level. Air discharge outlets with individual control may be placed in these ducts diffusing the air downward over the passengers.

The outside air intake will be fitted with filters for air cleaning, so that all the necessary functions of summer conditioning are performed.

The total weight of the system, it was stated, is approximately 600 lbs., and it will take up only about 27 cu. ft. It takes about 6 hp. to operate the conditioning system for this sized vehicle. For winter operation in northern climates, a heating coil and humidifier can be supplied to provide complete year-round air-conditioning service.

It is expected that several companies will equip their busses with trial installations.

Commercial production of the new system will be begun by Houde Engineering Corp. at Buffalo under an arrangement with Carrier Engineering Corp.

LARKIN COILS
for...
AIR CONDITIONING

The ANSUL
Twins
MAKE REFRIGERATION SATISFACTION Certain



You will find Ansul Sulphur Dioxide and Ansul Methyl Chloride perfect for refrigeration purposes. The individual analysis of every cylinder is your guarantee of highest quality at all times.

ANSUL CHEMICAL COMPANY
MARINETTE WISCONSIN

Larkin Says 'Package' Air Conditioning Will Accelerate Sales in Household Market

By Lester U. Larkin, Vice President, Larkin Refrigerating Corp.

Some of the greatest strides have been made in commercial refrigeration since the advent of the package coil. When this coil was first announced there was a great deal of criticism because of the fact that in many instances the package coil recommended for a given application has much more surface or capacity than was actually required to remove heat from that particular application. Sales departments, however, very quickly realized that what actually happened was that the customer who purchased that coil, while he paid a little more money than he would have paid theoretically if a coil of exactly the exact capacity had been recommended, accomplished tremendous savings by the elimination of engineering work on each and every job. It is possible for manufacturers to make package coils in production quantities and for the sales departments to sell their equipment, when that over-all picture is considered, at a lower cost than it would have been possible to do, if each sale had to be so completely engineered.

While the problems entailed in air conditioning now and probably always will require a greater amount of engineering than is required in commercial refrigeration, I am convinced package air conditioning can be sold to residences and undoubtedly to small shops and stores, where the problem is principally one of cooling, purifying and dehumidifying the air. In the average home air-conditioning installation there would probably be at a maximum not to exceed 30 per cent differential in a given sized home because of location, and therefore, it is possible to submit a rule of thumb information in such a simplified form that average present sales organizations would be qualified to sell air conditioning from a catalog on virtually a package basis.

Through observation and experience we have determined that not more

than four different sized cabinets would be necessary to take care of all resident and small store applications. These service cabinets would be all constructed in multiples of 23 in. x 23 in. cubes, also 11 in. x 23 in.

By standardizing in this manner all of the angle frames would be stocked by the distributor; and with only four sizes of angle frames, it would be possible for the distributor to build an unlimited number of cabinet sizes.

These cabinets would then be designed with the standard filter at top, a proper coil in the middle, and the opening for the blower at the bottom.

It would only be necessary for the distributor to stock four different sized coils to be able to take care of any application.

For economy in installation and cost of operation, several cabinets would be located at advantageous points in the basement so as to eliminate the necessity of running air ducts long distances, since it is much more economical to run liquid and suction lines than air ducts.

Each cabinet could be equipped with its own individual blower, making it possible for the owner to use one or all of the blowers at one time, using only the amount of refrigeration desired at one time.

Sales departments make the sales based on known cost, including cabinets and coils, filters, condensing units, and in fact everything except the small amount of duct work necessary within the walls itself. When it is definitely known just how far these ducts must run there will be no difficulty in getting a price from the sheet metal workers.

With this setup the distributor knows ahead of time that he is definitely going to make a profit on the job; and more than this, it eliminates the tremendous amount of engineering service on jobs which up to the present time has represented about 50 per cent of his total cost.

Kelvinator Distributors' Engineers Meet at Factory to Help Formulate 1936 Plans

DETROIT—For the purpose of learning from its distributors' air-conditioning engineers exactly the problems they have encountered and the suggestions they may have for extending air conditioning to the home and for commercial installations, Kelvinator Corp. recently held a meeting of factory and distributors' air-conditioning engineers.

Information secured from the engineers at the meeting will be used by Kelvinator's air-conditioning division in formulating a definite plan of organizing all functions of the air conditioning business in order to afford better control of costs. Kelvinator's 1936 air conditioning sales plans thus will be keyed in with engineering application and design.

Led by J. K. Knighton, manager of

Kelvinator's air-conditioning sales division, and H. M. McGaughey, head of the air-conditioning applications division, the conference disclosed the importance of the engineer in considering motives of purchase, economic justification, application, and design of air-conditioning equipment.

Engineers attending the conference reported an increasing interest by the public in residential air conditioning. They stated that home construction is rapidly on the increase and that fact is opening a profitable market for year-round air-conditioning installations.

Following this conference, basic air-conditioning engineering schools will be conducted by Kelvinator factory men for distributors' engineers throughout the country.

Air Conditioning Brings 40 Per Cent Summer Business Increase to Arizona Club

PHOENIX, Ariz.—Installation of 71 Westinghouse air conditioners in the Arizona Club here brought a 40 per cent increase in business during the past summer, declares R. F. Burke, manager of the club.

When queried about some of the results of the installation, he said:

"June was a profit month for the first time in the history of the club. The next month was the best July the club had ever enjoyed."

"Installation of the equipment was instrumental in securing new members as well as reinstating old ones."

"It keeps members in the club throughout the year. Previously they

checked out of bedrooms during the hot summer months."

"Members are easier to please, air conditioning keeping them in a better humor. Foods taste better, and more beverages are sold."

"Billiard rooms and card rooms have shown increased patronage."

Westinghouse air conditioners installed include 53 floor-type conditioners and 18 suspended-type ceiling units. The ceiling units are used in the bedrooms, where they are either mounted in the room proper, or installed in the closet, the conditioned air being discharged through a grille above the door.

G-E Introduces New Psychrometric Chart

BLOOMFIELD, N. J.—Air-conditioning department of General Electric Co. has made a new and improved psychrometric chart for solving the problems encountered in calculating the properties of air. It is the result of considerable research and experiment to develop a chart which would be more practical in form and which would simplify the reading of charted values.

The arrangement of lines on the chart is designed for greater accuracy and for an appreciable saving in time. As a result of this arrangement, values of all characteristics can be read, from any stated point on the chart, without using auxiliary curves.

Designed for permanent use at desk or drawing board, the chart measures 14x20½ inches and is printed in light brown and black. Considerable experimentation was made to find a suitable non-inflammable material, rather than the conventional transparent materials of inflammable nature.

This resulted in the use of a basic foundation of a thin plate of laminated resinous substance similar to bakelite, with paper sheets, imprinted with the chart and explanatory data, sealed to both sides. The exposed surfaces were coated, by a special process, with a transparent and microscopically thin layer of a new type of synthetic resin. This acetate surface was given the proper grain by metal plate impression.

Result is a permanent chart, with brown lines of a faint cream-colored background, which takes a drawing pencil like a good quality drawing paper. Pencil lines of any color may be either washed or erased easily.

The new chart is obtainable, at a nominal cost, through General Electric air-conditioning dealers.

Problems Solved in Installation in 10-Story Topeka Structure Show Adaptability of Air Conditioning to Old Buildings

TOPEKA, Kans.—The adaptability of air conditioning to almost any problem that may be confronted in an old building has been successfully demonstrated in an installation completed this summer for the 10-story National Reserve Life Building here, by the Capital Iron Works Co., Frick distributor.

Several features of the installation are being used as talking points for conditioning other old buildings in the Kansas territory. No rentable space was used in the installation—a point of objection usually of first interest to the owner of the old building.

A second feature was the designing of ducts to provide for the shifting of partitions which are especially prevalent in old buildings. The elimination of odors originating in medical and dental offices was obtained by equipment which allowed the greatest use of window cracks, as a means of escape for the air forced from its place by the conditioned air being circulated through the building.

The National Reserve Life Building has 10 floors and the problem is complicated by the fact that it houses a cafe, a drug store, a bank, and a barber shop.

Air conditioning for the building requires 140 tons of refrigeration, supplied by two Frick compressors, one of which uses a two-speed motor so that at low speed this machine can handle the coffee shop and the drug store at night, when the load is considerably less. Compressors are equipped with automatic unloaders so that the motors can be started across the line.

A Minneapolis-Honeywell step-con-

troller is used to select the right combination of machinery to maintain the suction pressure in the lines.

The refrigerant, Freon, is pumped to the roof of the building where it is cooled in a shell and tube condenser. Water is pumped through this condenser at the rate of 11 g.p.m., and cooled by means of an atmospheric cooling tower.

By means of gravity flow, the refrigerant is sent to the cooling unit located on each floor. Duct work is so designed that air can be supplied to new rooms as added. Rate of fresh air intake is from 20 to 50 per cent, depending upon the outside temperature conditions.

Each floor is divided into "zones" so that the cooling effect can be shifted to meet the sun load as it changes from one side of the building to the other. On the ground floor individual units are used due to the difference in rental space. Because bank, drug store, cafe, and barber shop each have their peak operation at different hours, a central system would have been impractical.

The entire system can be controlled by a master panel in the engine room in the basement. A leak notifies operators of its existence by an automatic alarm system.

Since the installation was in an old building, it was found that for the most part the air being replaced by the circulated conditioned air took care of itself. In every office, a considerable amount escaped through window cracks. Most of the offices, however, are provided with small grilles in the doors to recirculate some air to zone conditioning units.

THIS IS OUR SCRATCHOMETER

This is the technical device we use in our laboratory to determine the comparative degree of hardness of different finishes. This "scratchometer" has proved (hundreds of times) that only porcelain enamel is the truly hard, durable finish.

BUT THIS IS

Your "SCRATCHOMETER"

Just a coin will tell you the big, all-important difference between porcelain enamel and all other finishes. You can't scratch fused-on porcelain enamel—but be careful!—your coin or penknife can easily ruin any other finish.

● You men on the retail sales floor don't need the highly technical laboratory "scratchometer" to prove the durability of porcelain enamel to your customers. You have your own personal "scratchometer" in your coin, pencil, eraser, penknife, or any other fairly hard substance.

Porcelain enamel is an inorganic (mineral) substance fused on steel at 1550 degrees white hot heat. Your coin won't touch it, because porcelain enamel is hard—flint hard. Demonstrate that fact to your

customers. Show them *why* porcelain enamel wears forever. *Why* it is the "lifetime finish."

Be certain your customers buy porcelain enameled appliances. That is the way to make repeat customers—and the longer profit. Write today for a free copy of our profusely illustrated, easy-reading, Sales Manual on Porcelain Enamel. It will help you sell the finish that makes good customers better—makes the cash register ring louder—makes your pay check bigger!

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AIR CONDITIONING

Revised Chicago Air-Conditioning Standards Are Studied by Machine Manufacturers

CHICAGO—A proposed set of standardized requirements, in latest revised form, intended to govern all air-conditioning installations made in the Chicago area, was presented to Refrigerating Machinery Association members for study and discussion during the organization's annual fall meeting here a fortnight ago.

The standards are a revision of those presented before members of the American Society of Heating & Ventilating Engineers at their annual meeting in Toronto in June. Chicago city health authorities, manufacturers' and consulting engineers, architects, and contractors' representatives cooperated in working out the standards, which are intended to be sound, yet flexible, and easily adaptable to changing conditions in the air-conditioning field.

Latest Revised Standards

Consensus of opinion among RMA members was that formal adoption of the standards by Chicago air-conditioning men will set the pace for similar standardization moves in other large cities throughout the country.

As currently revised, the proposed standards follow:

1. *Scope:* These standards are intended to set forth minimum requirements only.

Note: By no means are they to be understood as limiting good practice or as preventing progress or invention.

What Air Conditioning Is

2. *Definition of Air Conditioning:* For the purpose of these standards, Air Conditioning is defined as the process by which the temperature, moisture content, movement, and cleanliness of the air in enclosed occupied spaces intended for human occupancy are maintained within definite required limits.

Note: For purposes of public protection these standards recognize apparatus which performs:

(a) All of the above functions in winter.

(b) All of the above functions in summer.

(c) All of the above functions in all seasons.

If an installation does not perform all of these functions it shall be called by a name which describes only the functions performed. For instance, neither a temperature controlling nor an air moving apparatus may be called an air-conditioning apparatus.

Figuring Heat Gains

3. *Design Coefficients for Heat Transfer Through Construction Barriers and for Heat Gains from People or Appliances:* shall conform to the standards recommended by current issue of The Guide, American Society of Heating & Ventilating Engineers.

4. *Minimum Standards for Refrigeration Apparatus:* shall conform with the current issue of the Refrigeration Data Book, American Society of Refrigerating Engineers.

5. *Minimum Design Temperatures*

and Humidities for Heating—shall be -10° F. outside and 70° F. inside. The humidifying apparatus shall be designed to furnish at least 35 per cent relative humidity when the outside temperature is 30° F.

Note: In buildings of ordinary construction a relative humidity of 35 per cent will cause sweating at outside temperature below 30° F.

Design Temperatures

6. *Minimum Design Temperatures and Humidities for Cooling:* shall be such as to cover both of the following conditions:

(a) Outside 95° F. dry bulb and 75° F. wet bulb; Inside 80° F. and 50 per cent relative humidity or equal effective temperature as determined from the summer comfort chart in ASH&VE Guide.

(b) Outside 80° F. dry bulb and 75° F. wet bulb; Inside 75° F. and 52 per cent relative humidity or equal effective temperature as determined from the summer comfort chart in ASH&VE Guide.

7. *Infiltration and Leakage:* Design capacity to care for infiltration of air from outside shall be provided in all heating systems in accordance with the latest issue of the ASH&VE Guide.

Note: Nothing in these standards shall be taken as preventing an allowance for infiltration and leakage when cooling.

Load Calculations

8. *Design Load Calculations:* (a) For winter air conditioning shall include allowances for heat loss through:

(1) Physical barriers such as walls, doors, windows, ceilings, floors, etc.

(2) Infiltration.

(3) Outside air for ventilation by mechanical means.

(b) For summer air conditioning shall include pertinent allowances for heat gain from the occupied zone through:

(1) Physical barriers such as walls, doors, windows, ceilings, floors, etc.

(2) Outside air for ventilation by mechanical means.

(3) Sun heat.

(4) Heat and moisture from occupants.

(5) Heat and moisture from appliances, illumination, combustion, etc.

The basis of all of these allowances shall conform with the coefficients in the current issue of The Guide, American Society of Heating & Ventilating Engineers, except where these standards give other specific requirements.

Allowance for Shading

9. *Design Allowance for Shading from Sunshine:* shall be made only when the plans and specifications specifically show such allowance, and when they give assurance that the owner is cognizant of the reduction in capacity on this account.

10. *Design Air Quantity:* If the heat is to be transported into the room or

out of the room by the air, either when heating or when cooling, the quantity and temperature and moisture condition of the air must be such as assuredly to accomplish the work. In addition:

(a) The basis of design for heating equipment, air volumes, duct work, and outside air connections shall be not less than the requirements of the Chicago Municipal Code.

(b) Summer air conditioning not covered by the Chicago Municipal Code when refrigeration or other cooling equipment is used, shall provide for the positive introduction of at least 10 c.f.m. of outside air per stated occupant, and for restaurants, beauty parlors, rooms with heavy smoking, and other rooms with special sources of contamination, this shall be increased to a minimum of 15 c.f.m. per stated occupant.

Where the occupancy is not known, or where the stated occupancy is below the Chicago City Code stipulation, the latter shall govern in determining occupancy.

Capacity of Ducts

11. *Design Duct Capacity:* Provision may be made in the duct design for recirculation of 100 per cent of the circulated air.

Note: This is for economical heating or cooling prior to occupancy.

The inlets, outlets, and ducts shall have sufficient capacity to permit the introduction of 100 per cent of air from outside and its removal.

12. *Design Air Distribution:* shall be such that:

(a) There shall be no mechanically produced air velocity within the occupied zone exceeding 50 linear feet per minute.

(b) The difference between the temperature of air currents and the average temperature of the occupied zone shall not be greater than as shown below for the various air current velocities:

Air Current Velocity Linear Feet Per Minute	Temperature Difference Average F Minus Current F
40 and over	2
39 and less	3

(c) The temperature shall not vary more than 2° F. at the same level within the occupied zone.

Note: Nothing herein shall be taken to prevent use of deflectors, diffusing grilles, nozzles, and the like with comparatively high velocity air currents above the occupied zone.

Refrigerating Apparatus

13. *Refrigerating Apparatus and Refrigerants:* All refrigerating and cooling equipment, piping, and specialties used in connection with air conditioning shall be designed and installed in accordance with the requirements of the City of Chicago, Department of Boiler Inspection and Cooling Plants, and the rules of the Chicago Board of Health.

The following are minimum acceptable capacities for various parts of the refrigerating apparatus to be used in cooling.

(a) Assumed condenser cooling water temperatures 76° F. for city water and 80° F. for cooling tower water.

(b) When the refrigerant is flammable, irritant, or toxic, a receiver of sufficient capacity to contain the entire operating charge of refrigerant shall be provided. Under such conditions adequate valves and facilities shall be provided for storing all of the refrigerant within the receiver.

Note: Should the apparatus be required for both cooling and heating at intervals during the same season,

the evaporator shall be so arranged that it is not exposed to temperatures which will cause a pressure greater than that for which the evaporator was designed.

(c) Apparatus such as evaporator, condensing units, expansion valves, etc., shall be installed with sufficient line valves and with proper fittings to permit efficient servicing or quick replacement of operating parts without exposing the interior of the refrigerant-containing parts to air and moisture where such exposure would affect the system adversely.

(d) Accessibility for servicing and repairing of all parts of the air-conditioning system must be provided.

(e) A leak-detecting device approved by the Chicago Board of Health must be provided where required.

Specifications of Materials

14. (a) The parts exposed to moisture shall be made of material at least equal to galvanized steel, and the gauges and weights of sheets and structural bracing shall conform with the recommendations of the ASH&VE Guide.

(b) Each branch of a duct system shall be provided with means for adjusting the air volume delivered.

15. *Heat Transfer Apparatus*

(a) All convectors where condensation might occur when cooling shall have drain pans with tubing running to a drip with air break above a trapped sewer connection or its equivalent.

(b) No fixed spray humidifier or spray dehumidifier shall be installed above the basement of a building unless there shall have been installed under it a water tight saffing graded to a drain so that in case of leakage or overflow there shall be no danger of water damage to the rooms under the apparatus.

(c) Eliminator plates shall be provided for spray humidifiers or spray dehumidifiers and shall be made of some durable material and so designed as to be easily replaceable.

(d) Air filters shall be easily accessible for inspection and removing without danger of spilling dust to the leeward of themselves when the substitution is made.

Noise Control

16. *Noise Control:* The following increase in noise level measured in the occupied zone nearest to the source of the noise and due to operation of air-conditioning apparatus shall not be exceeded:

Existing Noise Levels Air Conditioning Not in Operation Windows and Doors Closed Occupancy And Activity Normal Decibels	Resultant Maximum Sound Levels Air Conditioning In Operation Decibels
5.....	7
10.....	15
15.....	23
20.....	30
25.....	38
30.....	45
35.....	52
40.....	60

17. *Insulation:* In air-conditioning work in which refrigeration is employed, all chilled surfaces exposed to temperatures and humidities which cause deposition of dew shall be insulated to such an extent at least that no condensation shall gather outside of the insulation.

18. *Guarantees:* Guarantees of performance when required shall be limited to capacities or conditions that are described and can be measured accurately and the guarantees shall state the condition under which such capacities or results are to obtain.

Detroit Ice Machine Co. Host to Frick Men At 2-Day Meeting

(Concluded from Page 1, Column 1)

master at the banquet Wednesday night, and introduced the guests and members of Universal Cooler's staff.

Frick factory representatives took charge of the sessions Thursday, outlining the company's accomplishments during the past years, and bringing to light plans for 1936.

Those in attendance at the meetings included:

H. B. Drillot, The C. M. Robinson Co., Columbus, Ohio; J. M. Lock, R. H. Lock, and A. K. Muir, all of J. H. Lock & Sons, Toronto, Ont.; Richard H. Mollenberg, Henry Mollenberg, Mollenberg-Betz Machine Co., Buffalo; Frank E. Hendrickson, J. W. Donnelly, The Hendrickson Machine Co., Cleveland; Thos. C. McKee, R. W. Neitzel, Midwest Engineering & Equipment Co., Chicago.

A. G. Loeffel, Meyer Blannke Co., St. Louis; C. E. Constable and E. W. Townsley, The C. M. Robinson Co., Cincinnati; C. C. Smith, Mack Machine Co. of Pennsylvania, Philadelphia; Joseph G. Hayes and Mr. Barton, Hayes Bros., Inc., Indianapolis.

John Carter, Frick Co., St. Louis; M. W. Garland, Frank R. Zumbro, P. H. Buch, Terry Mitchell, D. Norris Benedict, and W. H. Aubrey, all of Frick Co., Inc., Waynesboro, Pa.

Geo. B. Bright, Theodore Huettnerman, W. W. Morgan, E. S. Staff, F. E. Hall, R. C. Doremus, Oscar Sennefeld, A. F. Cramer, Jos. G. Brutell, and L. L. Adams, all of the Detroit Ice Machine Co., Detroit; and John Weidenfeller, Detroit Ice Machine Co. branch, Grand Rapids, Mich.

Harrison & Tracy Are Speakers at Meeting Of Chicago A.S.R.E.

CHICAGO—Chicago section of the American Society of Refrigerating Engineers held its first fall meeting Tuesday, Oct. 29, at the Chicago Engineers Club, with Harry Harrison, Carrier Engineering Corp., national president of the A.S.R.E., as guest or honor.

Mr. Harrison spoke on "Looking Backward into Now," discussing thermometry, calorimetry, and thermodynamics.

Another speaker of the evening was Edward B. Tracy, manager of the pipe, tube, and fitting department of the American Brass Co., Waterbury, Conn. Mr. Tracy discussed the manufacture of copper pipe and fittings and their application to refrigeration, air conditioning, and heating. His talk was supplemented by a motion picture entitled "From Mine to Consumer."

Deane E. Perham was chairman of the meeting, J. E. Petermann, vice chairman, and B. E. Seamon, secretary.

Other guests present included: John Howatt, president of the American Society of Heating & Ventilating Engineers; Harry R. Halterman and A. J. Authenrieth of the Chicago section of the A.S.R.E.; Arnold Goetz, director of the A.S.R.E.; and P. J. Murray, assistant to the chief of the boiler inspection department, City of Chicago.

Detroit Engineers Will Visit Waterworks Next Monday

DETROIT—A joint meeting of the Detroit section of the American Society of Refrigerating Engineers and the Michigan chapter of the American Society of Heating & Ventilating Engineers will be held next Monday, Nov. 11, to inspect the Springwells Pumping station, located at 8100 W. Warren Ave., near the Graham-Paige plant.

A. C. Wallich, president of the Detroit chapter of the A.S.H.V.E. and also a member of the Detroit water board, will conduct the tour of the plant, which will be in operation.

Members will have dinner right at the pumping station at 6:30. The inspection trip is scheduled to start at 7:30. Women are also invited to attend.

York Refrigeration Sold For 18 New Destroyers

WASHINGTON, D. C.—York Ice Machinery Corp. has received the contract to install refrigeration equipment in 18 new U. S. Navy destroyers now under construction at Philadelphia, Boston, Norfolk, Puget Sound, and Mare Island.

York Freon machines will be used for cooling the butter and egg, vegetable, and meat rooms in the destroyers. Each ship will also have a small ice making tank.

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Air Conditioning and New Decorations Transform South Bend Hotel Cafeteria into Modern Coffee Shop Doing Three Times Its Former Business

SOUTH BEND, Ind.—Through the use of air conditioning, concealed lighting, colorful decorations, and consistent furnishings, an old cafeteria in The Oliver hotel here has been transformed into a modern coffee shop, with a business triple that which it formerly did.

The coffee shop room is 29x108 ft., without pillar or post, with street front and street entrance, a separate entrance from the hotel, and direct entrance to the main hotel kitchen.

To allow room for the air-conditioning system's return and supply ducts, it was necessary to lower the ceiling along one side of the room, over the lunch counter. Conditioned air is delivered to the room along the top of the wall over the counter, circulates in the restaurant, and is drawn out through vents in the lowered ceiling over the counter.

Other vents in the outer wall back of the counter draw out all the heat from the urns and gas and electric cookers. The conditioned air is recirculated, reinforced with a constant supply of fresh air.

For the air-conditioning needs, it was found that the deep well water supply was low enough in temperature to properly cool and dehumidify the room. This effected a considerable saving.

A combined cooling, heating, and ventilating system was installed in the shop. A cold air duct was run from the cooling unit in the kitchen, and was discharged through a number of grilles located above the counter, as stated before.

In order to exhaust this air and to return it to be recirculated at as low a temperature as possible, it was necessary to catch it before it came in contact with the heat of the coffee urns, toasters, and grills.

This was accomplished by locating the exhaust duct over the counter, and by exhausting the heat generated behind the counter by a separate duct. The workability of this system was best served by keeping the space between the top of the counter and the underside of the furred duct space as small as was consistent with comfortable service.

By accepting these mechanical conditions and furring them in, the general form of the counter side of the room had determined itself.

Since the room had a revolving door in one corner, the furred upper area was curved outward to meet this condition. A similar curve, at the other end of the room, allowed the soda bar to be placed so that it was not disturbed by the necessary service line to the kitchen.

COMMERCIAL REFRIGERATION

4 Methods of Testing & Rating Mechanical Condensing Units Approved by Nema & RMA

WASHINGTON, D. C.—After many months of intensive work, a joint committee composed of representatives of the American Society of Refrigerating Engineers, the Refrigerating Machinery Association, and the Refrigeration Division of the National Electrical Manufacturers Association, formulated Proposed Standard Methods for Testing Mechanical Condensing Units.

These proposed standards were discussed in meetings of the full membership of both the Refrigerating Machinery Association and the Refrigeration Division of the National Electrical Manufacturers Association, and received unanimous approval. This action is an outstanding forward step in the progress of the refrigerating machinery industry and one which should prove of lasting and significant benefit to the manufacturers and users of refrigerating machinery. While these standards are in approximately final form, there may be one or two further revisions of a minor character.

It is interesting to note, in connection with these standards, that four methods of testing and rating mechanical condensing units are proposed as optional. This makes these approved methods of rating and testing peculiarly adaptable and adds to the comprehensiveness of the fine work produced on behalf of the refrigerating machinery industry by the joint committee. The members of the joint committee were:

The American Society of Refrigerating Engineers:
Glenn Muffly (chairman).
F. R. Zumbro.
W. R. Woolrich.

Refrigerating Machinery Association:
L. S. Morse, York Ice Machinery Corp.
A. H. Baer, Carbondale Machine Corp.

W. H. Carrier, Carrier Engineering Corp.

Refrigeration Division, National Electrical Manufacturers Association:
H. M. Williams, Frigidaire Corp.
L. A. Philipp, Kelvinator Corp.
Chester Lichtenberg, General Electric Co.

Standard Test Methods

Following are the first 10 steps in the standard test methods for mechanical condensing units. The balance of the approved test methods data will be published in next week's issue.

I. *Standard Test Methods* shall be used in determining the standard ASRE rating of mechanical condensing units. There shall be a primary test and a simultaneous confirming test. The capacity determined by the confirming test shall agree with that determined by the primary test within 3 per cent but the results of the primary test shall govern for rating purposes.

a. Primary tests are as follows: (1) Brine tank calorimeter; (2) concentric tube calorimeter; (3) secondary refrigerant calorimeter; (4) flooded system primary refrigerant calorimeter; (5) dry system primary refrigerant calorimeter.

b. Confirming tests are as follows: (1) Liquid refrigerant quantity method; (2) liquid refrigerant quantity meter and flow meter; (3) condenser water method.

A.S.R.E. Values Used

II. *Values* to be determined under the conditions specified in the ASRE Standard Methods of Rating Condensing Units are:

a. Refrigerating capacity in B.t.u. per hour or tons, each of 12,000 B.t.u. per hour.

b. Power input in watts or kilowatts.

c. Cooling water consumption in gallons per hour.

Capacity Measuring Apparatus

III. *Types of Capacity Measuring Apparatus.*

a. *A Condensing Unit Calorimeter* is an apparatus for determining the refrigerating capacity of condensing unit by measuring the heat input required to balance the refrigerating effect produced in the evaporator by the condensing unit.

(1) A Brine Tank Calorimeter includes an evaporator and a heating unit submerged in an externally insulated brine bath. The refrigerating effect produced in the evaporator by the condensing unit is balanced by heat added to the brine bath.

(2) A Concentric Tube Calorimeter includes a heat exchanger for the transfer of heat from a fluid heating medium to a vaporizing refrigerant. The refrigerating effect produced by the condensing unit is balanced by heat given up by the fluid heating medium.

(3) A Secondary Refrigerant Calorimeter includes an evaporator located in the top and a heating unit located in the bottom of a pressure tight container which is partially filled with a secondary refrigerant. The refrigerating effect produced in the evaporator by the condensing unit is balanced by heat added to the secondary refrigerant.

(4) A Primary Refrigerant Calorimeter includes an evaporator with a heating unit in direct thermal contact with a primary refrigerant. The refrigerating effect produced in the evaporator by the condensing unit is balanced by heat added to the primary refrigerant.

b. *A Liquid Refrigerant Quantity Meter* is an apparatus for determining

the refrigerating capacity of a condensing unit by measuring the circulation of the refrigerant. It includes hand operated measuring cylinders or an integrating mechanism and supplementary devices for determining the quantity of liquid refrigerant circulated in a given period of time. The refrigerating effect produced by the condensing unit is the product of the pounds of refrigerant circulated per hour and the difference between the heat content per pound of refrigerant vapor entering and refrigerant leaving the condensing unit.

c. *A Liquid Refrigerant Flow Meter* includes a mechanism and supplementary devices for determining the instantaneous rate of circulation of liquid refrigerant. The refrigerating effect produced by the condensing unit is the product of the pounds of refrigerant liquid circulated per hour and the difference between the heat content per pound of refrigerant vapor entering and refrigerant liquid leaving the condensing unit.

d. *Condenser Water Method* determines the refrigerating effect produced by the condensing unit from the heat transferred to the condenser water.

Calibration of Instruments

IV. *Instruments*, whose types and accuracies are listed below, shall be calibrated against secondary standards before and after each test.

a. *Temperature measuring instruments.*
(1) Temperature measurements shall be made with one or more of the following instruments: (a) Mercury-in-glass thermometers, (b) thermocouples, (c) electric resistance thermometers.

(2) Accuracy shall be within the following limits: (a) Brine or water in calorimeters, plus or minus 0.1° F., (b) water in condensers when data are used in confirming tests, plus or minus 0.1° F., (c) all other temperatures, plus or minus 0.5° F.

b. *Pressure measuring instruments.*
(1) Pressure measurements shall be made with one or more of the following instruments: (a) Mercury column, (b) bourdon tube gauge.

(2) Accuracy shall be within the following limits: (a) Suction pressures, absolute, plus or minus 1 per cent, (b) other pressures, absolute, plus or minus 2 per cent.

c. *Electrical measuring instruments.*
(1) Electrical measurements shall be made with one or more of the following instruments: (a) Indicating, (b) integrating.

(2) Accuracy shall be within the following limits: (a) Indicating instruments within 0.5 per cent of full scale reading; (b) integrating instruments within 1 per cent.

d. *Refrigerant flow measuring instruments.*

(1) Volume measurements shall be made with one or more of the following instruments: (a) Liquid refrigerant quantity meter; (b) liquid refrigerant flow meter.

(2) Accuracy shall be within plus or minus 1 per cent.

e. *Brine or water flow measuring instruments.*
(1) Volume measurements shall be made with one or more of the following instruments: (a) Liquid quantity meter, measuring either weight or volume; (b) liquid flow meter.

(2) Accuracy shall be within plus or minus 1 per cent.
f. *Speed measuring instruments.*
(1) Speed measurements shall be made with one or more of the following instruments: (a) Revolution counter; (b) tachometer; (c) stroboscope; (d) oscillograph.
(2) Accuracy shall be within plus or minus 0.25 per cent.
g. *Time measurements* shall be made with apparatus whose accuracy is within plus or minus 0.1 per cent.
h. *Weight measurements* shall be made with apparatus whose accuracy is within plus or minus 0.2 per cent.
V. *Tables of Physical Properties.* Physical data used in this test procedure shall be obtained from International Critical Tables or the current issue of ASRE Data Book.

Tests

VI. Tests.

a. Preparation.

(1) The condensing unit shall have been operated for a total of not less than 72 hours before capacity test is started.

(2) The condensing unit shall be placed in a room in which the temperature can be controlled.

(3) Provision shall be made to insure that no refrigerant vapor leaves the condensing unit.

(4) The correct oil and refrigerant charges shall be placed in the proper locations in the refrigerating system and the refrigerant shall be maintained at normal operating level in the condensing unit liquid receiver.

(5) The condensing unit shall be operated for at least 1½ hours and then shut down with the suction stop valve and the condensing unit liquid outlet valve closed. The temperature corresponding to the saturated static vapor pressure on the high pressure side of the condensing unit shall be within 2° F. of room temperature after the unit has been allowed to stand idle in a constant temperature room for at least twelve (12) hours.

Methods of Rating Mechanical Condensing Units

The following are the "standard conditions" for rating mechanical condensing units as approved early this year by the Joint Committee. The "standard test methods" described in the adjoining columns on this and the succeeding page outline the test procedure for determining the capacity of the units under the standard conditions.

1. A mechanical condensing unit is a specific refrigerating machine combination for a given refrigerant consisting of a motor driven compressor for operation at a given speed, a condenser, a liquid receiver, and the regularly furnished accessories.

2. The power input rating of an electrically driven mechanical condensing unit is its total power input in watts when the unit is operated under the conditions specified in paragraph 4.

3. The capacity of a mechanical condensing unit is the refrigerating effect in B.t.u./hr. produced by the change in total heat content between the liquid refrigerant leaving the condensing unit per hour and the total heat content of the vapor refrigerant entering the condensing unit per hour under the conditions defined in paragraph 4.

4. The capacity rating of a mechanical condensing unit shall be expressed in B.t.u./hr. and/or tons, each of 12,000 B.t.u./hr., and shall be measured under conditions defined as follows:

(a) The unit ratings shall be divided

(6) Mechanical checks shall be made to insure refrigerating system gas tightness, proper belt tension, compressor valve tightness, bearing freeness, correct compressor rotation and condensing unit mounting comparable to service conditions.

b. Operation and Limits.

(1) Start the compressor and regulate the voltage at the motor terminals to within plus or minus 2 per cent of motor rated voltage.

(2) Adjust low pressure side conditions to specified suction pressure at condensing unit plus or minus 1 per cent of absolute pressure.

into four standard groups based on refrigerant vapor and cooling water temperatures as follows:

Group No.	Temperatures in Degrees Fahrenheit			
	Saturated Refrigerant Vapor	Entering Compressor	In-coming	Out-going
I	minus 10	65	75	85
II	plus 5	65	75	90
III	plus 20	65	75	90
IV	plus 40	65	75	95

(b) The suction pressure shall be measured at the suction inlet connection to the condensing unit.

(c) The standard ambient temperature for air cooled and/or water cooled condensing units shall be 90° F.

5. The performance factor of a mechanical condensing unit is the ratio of its capacity to its energy input, expressed in B.t.u./watt hr. and/or tons, each of 12,000 B.t.u./hr., per kilowatt.

6. The cooling water consumption of a mechanical condensing unit is the total number of gallons per hour required under the conditions specified in paragraph 4.

(3) Adjust the temperature of the suction vapor at the condensing unit to 65° F., plus or minus 5° F.

(4) Water Cooled Condensing Units. Adjust the temperature of the inlet water flowing to the condensing unit to 75° F., plus or minus 0.5° F., and adjust the water rate to give the outlet temperatures indicated in Paragraph 4.

(Concluded on Page 18, Column 1)

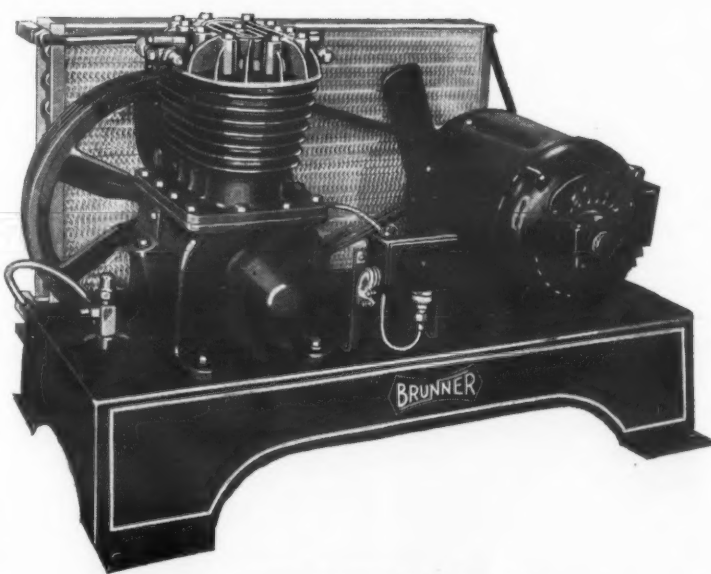


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COMMERCIAL REFRIGERATION

Approved Methods for Testing Mechanical Condensing Units

(Concluded from Page 17, Column 5)

graph 4 of ASRE Standard Method of Rating Condensing Units. The ambient temperature at the condensing unit shall be taken as the average reading of four temperature measuring instruments placed in a horizontal plane midway of the height of the condensing unit and 18 inches from each side of the unit. The average ambient temperature shall be 90° F. plus or minus 2° F. No abnormal air flow shall be created over the condensing unit.

(5) Air Cooled Condensing Units. The temperature of the air flowing to the condensing unit shall be taken as the average reading of at least four temperature measuring instruments so located as to indicate the average air temperature. Each temperature measuring instrument shall be protected against radiant energy so that true dry bulb temperatures may be read. The temperature of the air flowing to the condensing unit shall be adjusted to 90° F. plus or minus 1.0° F. No abnormal air flow shall be created over the condensing unit.

(6) Operate the condensing unit before taking readings, until steady temperatures and mechanical equilibrium are established.

Condensing Unit Data

VII. Condensing Unit Data to be Recorded shall include:

- Pressure of refrigerant vapor entering the unit.
- Temperature of refrigerant vapor entering the unit, measured at 24 in. from the compressor;
- Condenser pressure at inlet;
- Temperature of liquid refrigerant leaving the unit;
- Ambient temperature at unit;
- Temperature of cooling water entering the unit;
- Temperature of cooling water leaving the unit;
- Gallons of cooling water per hour;
- Pressure of cooling water entering the unit;
- Pressure of cooling water leaving the unit;
- Revolutions per minute of compressor;
- Revolutions per minute of motor;
- Watts input to condensing unit;
- Volts at motor terminals;
- Frequency at motor terminals;
- Barometric pressure.

Report of Test

VIII. Report of Test shall include:

- Test number;
- Date of test;
- Condensing unit manufacturer's name;
- Condensing unit model designation;
- Motor nameplate rating;
- Compressor test speed;
- Compressor displacement in cu. in. per revolution;
- Refrigerant;
- ASRE rating group;
- Condensing unit capacity in B.t.u. per hour or tons each of 12,000 B.t.u. per hour;
- Motor input in watts or kilowatts;
- Water consumption in gallons per hour;
- List of condensing unit accessories regularly furnished and in place during the test.

Brine Tank Calorimeter Method

IX. Brine Tank Calorimeter Method.

a. Description:

(1) The evaporator shall be of the dry system coil type with sufficient surface to superheat the refrigerant vapor leaving the calorimeter to approximately 65° F. with a brine temperature not exceeding 100° F. and yet being compact so that a minimum amount of brine will be required.

(2) The refrigerant control may be of either the hand regulated or the automatic expansion valve type and shall be located close to the brine tank. The control and the refrigerant line to the brine tank shall be insulated to minimize loss of refrigeration.

(3) The heaters shall be of the electric immersion type with ample margin in capacity to provide ready control of the brine temperature.

(4) The brine bath shall have a low enough freezing point to prevent it congealing at a temperature corresponding to the operating suction pressure.

(5) Stirrers shall be provided for agitating the brine. They shall have sufficient capacity so that the maximum variation in temperature throughout the bath will not exceed 5° F. The heat added to the brine by agitation shall be determined.

(6) The tank shall be insulated in such a manner that the heat leakage will not be greater than 5 per cent of the capacity of the condensing unit.

b. Calibration of a brine tank shall be performed by the heat absorption method. This shall be carried out as follows:

(1) Four temperature measuring instruments shall be used to indicate the ambient temperature around the calorimeter, each instrument being located approximately in the middle of one of the vertical outside wall areas of the calorimeter, and spaced 1/2 in. from such wall. During calibration, the average ambient temperature indicated by the average of the four temperature readings shall be held constant within plus or minus 2° F. at any desired value not exceeding 90° F.

(2) Stirrer motors shall be operated and calorimeter heater input adjusted to maintain average brine temperature at approximately 25° F. above the ambient temperature.

(3) After thermal equilibrium has been established the heat shall be held constant, and ambient and brine temperatures shall be recorded each hour for not less than 10 hours.

(4) The mean temperature difference between brine and ambient shall be determined from the difference between the average of brine temperature and average of ambient temperatures during the period of thermal equilibrium.

(5) The heat leakage coefficient is given by:

$$Q_L = \frac{Q_h + Q_i}{t_b - t_a}$$

Q_L =heat leakage coefficient in B.t.u. per hour per degree F. difference.

Q_h =calorimeter heater input in B.t.u. per hour.

Q_i =calorimeter stirrer heat added to the brine in B.t.u. per hour.

t_a =average ambient temperature around the calorimeter in degrees F.

t_b =average brine temperature in degrees F.

(6) The heat leakage is given by:

$$Q_L = Q_i(t_b - t_a)$$

Q_L =heat leakage coefficient in B.t.u. per hour per degree F. difference.

Q_i =heat leakage into calorimeter in B.t.u. per hour.

t_a =average ambient temperature in degrees F.

t_b =average brine temperature in degrees F.

(7) This method is recommended, but the calorimeter may be calibrated for heat leakage by any other equivalent method.

Procedure of Test

c. Procedure:

(1) The specified pressure of refrigerant vapor entering the condensing unit is adjusted by means of the refrigerant control, and the specified temperature of the refrigerant vapor entering the condensing unit is adjusted by varying the heat input to the brine bath.

(2) Calorimeter data to be recorded after condensing unit rating specified conditions have become established are:

(a) Pressure of refrigerant vapor at evaporator outlet; (b) temperature of refrigerant vapor at evaporator outlet; (c) pressure of liquid refrigerant entering refrigerant control; (d) temperature of liquid refrigerant entering refrigerant control; (e) temperature of brine; (f) ambient temperature at calorimeter; (g) calorimeter heater input; (h) calorimeter stirrer heat input.

(3) All readings shall be taken every 30 minutes.

(4) Test shall be continued until four successive readings are within the allowable limits given in Section 6 and variation in brine temperature between the beginning and end of the test is not great enough to cause an error of more than 1 per cent in condensing unit capacity.

Determination of Capacity

d. Calculations.

(1) The capacity of the condensing unit shall be determined from the following:

$$Q = \frac{h_{s1} - h_{r1}}{h_{s2} - h_{r2}} (Q_h + Q_i + Q_L)$$

h_{r1} =heat content of the refrigerant liquid leaving the condensing unit in B.t.u. per pound.

h_{r2} =heat content of the refrigerant liquid entering the refrigerant control in B.t.u. per pound.

h_{s1} =heat content of the refrigerant vapor entering the condensing unit under conditions specified in the ASRE Standard Method of Rating Condensing Units in B.t.u. per pound.

h_{s2} =heat content of the refrigerant vapor leaving the calorimeter in B.t.u. per pound.

Q =condensing unit capacity in B.t.u. per hour.

Q_h =calorimeter heater input in B.t.u. per hour.

Q_i =calorimeter stirrer heat input in B.t.u. per hour.

Q_L =calorimeter heat leakage gain in B.t.u. per hour.

Concentric Tube Method

X. Concentric Tube Calorimeter Method.

a. Description:

(1) A concentric tube calorimeter consists of two independent concentric fluid circuits which are located in heat exchange relationship to each other. Liquid refrigerant is introduced into the inner circuit where it is vaporized and the vapor superheated to approximately 65° F. A heating medium of known properties is circulated through the outer circuit where it supplies the heat required to vaporize and superheat the refrigerant.

(2) The refrigerant control may be of either the hand regulated or the automatic expansion valve type and shall be located close to the calorimeter. The control and the refrigerant line to the calorimeter shall be insulated to minimize loss of refrigeration.

(3) The calorimeter shall be insulated in such a manner that the heat leakage will not be greater than 5 per cent of the capacity of the condensing unit.

Calibration of Calorimeter

b. Calibration:

(1) The heat leakage of the calorimeter shall be determined by circulating the heating medium through the outer circuit of the calorimeter which is subject to no lead other than heat leakage.

(a) If water or brine is used, the temperature difference between the water or brine into and out of the calorimeter shall be not less than 10° F. and shall be established by regulating the rate of flow and the inlet temperature of the water or brine. The ambient temperature during this calibration shall be held constant within plus or minus 2° F. at any desired value not exceeding 90° F.

(b) The inlet temperature of the water or brine shall be at least 30° F. above the ambient temperature. The test shall be continued until four successive brine or water temperatures taken at one hour intervals at both water or brine inlet and outlet of the calorimeter and with constant rate of flow show fluctuations no greater than plus or minus 0.2° F.

(c) If steam is used as the heating medium, the heat leakage of the calorimeter shall be determined by collecting and weighing the steam condensate from the heating medium circuit. The steam pressure shall be held constant within plus or minus 0.5 lb./in.² at any desired value. The ambient temperature during this calibration shall be held constant within plus or minus 2° F. at any desired value not exceeding 90° F. Precautions must be taken to maintain the steam surface fully active without air or water binding, to maintain not less than 8° F. superheat on the steam admitted to the calorimeter, and to prevent loss by evaporation of condensate in the collecting vessel either by subcooling the condensate or adequately covering the vessel. The average outer surface temperature of the concentric tube shall be determined by at least 10 equally spaced temperature measuring devices. The test shall be continued until four successive readings of condensate weight taken at not less than our hour intervals are within plus or minus 10 per cent of each other.

(2) The heat leakage coefficient is given by:

$$Q_L = \frac{WC(t_1 - t_2)}{h_{s1} - h_{r1} - (h_{s2} - h_{r2}) - Q_i}$$

C =specific heat of water or brine. Q_L =heat leakage coefficient in B.t.u. per hour per degree F. difference.

t_1 =temperature of water or brine entering the calorimeter.

t_2 =temperature of water or brine leaving the calorimeter.

t_a =average ambient temperature around the calorimeter in degrees F.

W =weight of water or brine circulated in lbs. per hour.

(b) If steam is used:

$$Q_L = \frac{(h_{s1} - h_{s2}) W_s}{t_a - t_b}$$

h_{s1} =heat content of entering steam in B.t.u. per pound.

h_{s2} =heat content of steam condensate at leaving temperature in B.t.u. per pound.

Q_L =heat leakage coefficient in B.t.u. per hour per degree F. difference.

t_a =average ambient temperature around the calorimeter in degrees F.

t_b =concentric tube average outer surface temperature in degrees F.

W_s =weight of steam condensate in pounds per hour.

(3) The heat leakage is given by:

(a) If water or brine is used:

$$Q_L = Q_i \left(\frac{h_{s1} - h_{r1}}{h_{s2} - h_{r2}} - 1 \right)$$

Q_L =heat leakage coefficient in B.t.u. per hour deg. F. difference.

Q_i =heat leakage from calorimeter in B.t.u. per hour.

t_a =average ambient temperature around the calorimeter in degrees F.

t_b =temperature of water or brine entering the calorimeter in degrees F.

t_c =temperature of water or brine leaving the calorimeter in degrees F.

(b) If steam is used:

$$Q_L = Q_i \left(\frac{h_{s1} - h_{s2}}{t_a - t_b} - 1 \right)$$

Q_L =heat leakage coefficient in B.t.u. per hour deg. F.

Q_i =heat leakage from calorimeter in B.t.u. per hour.

t_a =average ambient temperature around the calorimeter in degrees F.

t_b =concentric tube outer surface average temperature.

(4) This method is recommended, but the calorimeter may be calibrated for heat leakage by any other equivalent method.

Procedure of Tests

c. Procedure.

(1) The specified suction pressure at the condensing unit is adjusted by means of the refrigerant control, and the specified temperature of the suction vapor at the condensing unit is adjusted by varying the heat input to the calorimeter.

(2) If water or brine is used, the temperatures of the water or brine entering and leaving the calorimeter during the test shall be maintained to within plus or minus 0.2° F. The weight of water or brine circulated through the calorimeter per hour shall be maintained within an accuracy of plus or minus 1 per cent.

(3) If steam is used as the heating medium, provision must be made to insure that only dry steam enters the calorimeter by obtaining not less than 8° F. superheat. The steam pressure in the calorimeter shall be measured with a mercury column to an accuracy of plus or minus 2 per cent, and the temperature of entering steam and leaving condensate shall be read with an accuracy of plus or minus 0.5° F. The weight of condensate shall be measured with an accuracy of plus or minus 1 per cent, and precautions shall be taken to prevent loss of condensate by evaporation. Measurement of the surface temperature of the steam pipe shall be made at not less than 10 equally spaced points.

(4) The calorimeter data to be recorded after condensing unit rating specified conditions have become established are as follows:

(a) Pressure of refrigerant vapor at evaporator outlet; (b) temperature of refrigerant vapor at evaporator outlet; (c) pressure of liquid refrigerant before refrigerant control; (d) temperature of liquid refrigerant before refrigerant control; (e) ambient temperature at calorimeter; (f) temperature of water or brine entering calorimeter when water or brine is used; (g) temperature of water or brine

leaving calorimeter, when water or brine is used; (h) weight of brine or water circulated per hour, when water or brine is used; (i) temperature of steam entering calorimeter when steam is used; (j) pressure of steam in calorimeter, when steam is used; (k) temperature of condensate leaving calorimeter, when steam is used; (l) weight of condensate in pounds per hour, when steam is used; (m) surface temperatures of steam pipe, when steam is used.

(5) All readings shall be taken every 20 minutes.

(6) Test shall be continued until four successive readings are within the allowable limits given in Section 6 and the variations in temperature and pressure conditions of the heating medium during the test shall not be great enough to cause an error of more than 1 per cent in condensing unit capacity.

Calculation of Results

d. Calculations.

(1) The capacity of the condensing unit shall be determined from the following:

(a) When water or brine is used:

$$Q = \frac{h_{s1} - h_{r1}}{h_{s2} - h_{r2} - (h_{s1} - h_{r1}) - Q_i} (WC(t_1 - t_2) - Q_i)$$

C =specific heat of water or brine. h_{r1} =heat content of the refrigerating liquid leaving the condensing unit in B.t.u. per pound.

h_{r2} =heat content of the refrigerant liquid entering the refrigerant control in B.t.u. per pound.

h_{s1} =heat content of the refrigerant vapor entering the condensing unit, under conditions specified in the ASRE Standard Method of Rating Condensing Units, in B.t.u. per pound.

h_{s2} =heat content of the refrigerant vapor leaving the calorimeter in B.t.u. per pound.

Q =condensing unit capacity in B.t.u. per hour.

Q_i =calorimeter heat leakage loss in B.t.u. per hour.

t_1 =temperature of the water or brine entering the calorimeter in degrees F.

t_2 =temperature of the water or brine leaving the calorimeter in degrees F.

W =weight of water or brine circulated in pounds per hour.

(b) When steam is used:

$$Q = \frac{h_{s1} - h_{s2}}{h_{s2} - h_{r2} - (h_{s1} - h_{r1}) - Q_i} (W_s(h_{s1} - h_{s2}) - Q_i)$$

h_{r1} =heat content of the refrigerant liquid leaving the condensing unit in B.t.u. per pound.

h_{r2} =heat content of the refrigerant liquid entering the refrigerant control in B.t.u. per pound.

h_{s1} =heat content of the refrigerant vapor entering the condensing unit, under conditions specified in the ASRE Standard Method of Rating Condensing Units, in B.t.u. per pound.

h_{s2} =heat content of the refrigerant vapor leaving the calorimeter in B.t.u. per pound.

Q =condensing unit capacity in B.t.u. per hour.

Q_i =calorimeter heat leakage loss in B.t.u. per hour.

W_s =weight of steam condensate in pounds per hour.

(To Be Continued Next Week)

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STATISTICS

58,105 Household Refrigerators Sold During September, 1935, By 14 Manufacturers

The following 14 member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) reported household refrigerator sales for September, 1935: Apex Electrical Mfg. Co., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Refrigerator Corp., Kelvinator Corp., Leonard Refrigeration Co., Norge Corp., Servel, Inc. (export only), Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg.

Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co. Member companies not reporting included: Jomoco, Inc., Merchant & Evans Co., and Sparks-Withington Co.

The sales of the reporting companies do, however, include units manufactured for the following concerns: Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., Sears, Roebuck & Co., and Truscon Steel Co.

SALES FOR SEPTEMBER, 1935

Lacquer (Exterior) Cabinets Complete		Domestic		Canadian		Other Foreign	
Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1. Chest	381	\$ 18,653	4*	192*	960	\$ 49,322	
2. Less than 3 cu. ft.	16	663			17	885	
3. 3 to 3.99 cu. ft.	2,596	148,460	32	1,815	716	41,172	
4. 4 to 4.99 cu. ft.	13,030	838,985	294	20,429	2,707	177,326	
5. 5 to 5.99 cu. ft.	9,753	772,349	68	5,215	702	56,876	
6. 6 to 6.99 cu. ft.	5,654	513,155	62	5,522	402	37,282	
7. 7 to 7.99 cu. ft.	3,347	364,574	80	8,825	235	25,324	
8. 8 to 8.99 cu. ft.	888	100,582	9	989	64	7,385	
9. 9 to 9.99 cu. ft.	52	9,904					
10. 10 to 10.99 cu. ft.	2	541					
11. Total Lacquer	35,719	2,767,863	541	42,603	5,803	395,472	

Porcelain (Exterior) Cabinets Complete		Domestic		Canadian		Other Foreign	
Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
12. Up to 4.99 cu. ft.	213	16,588	16	1,532	104	8,212	
13. 5 to 5.99 cu. ft.	1,306	115,743	3	251	267	23,888	
14. 6 to 6.99 cu. ft.	1,690	175,151			133	14,752	
15. 7 to 7.99 cu. ft.	2,079	247,988	5	642	151	18,240	
16. 8 to 8.99 cu. ft.	1,032	149,537	11	1,451	97	14,539	
17. 9 to 9.99 cu. ft.	425	76,302	2	398	53	9,384	
18. Total Porcelain	6,958	830,186	39	4,772	820	92,495	

20. Total Lines 11 and 19	42,677	3,596,052	580	47,375	6,623	487,967	
21. Separate Systems							
1/4 Hp. or Less	5,980	247,417	1	113	1,646	71,979	
22. Separate Household Evaporators	139	4,015	190	2,901	269	5,092	
23. Total Lines 20, 21, 22	48,796		771		8,538		
24. Condensing Units							
1/4 Hp. or Less	360	22,675	7	429	741	36,126	
25. Cabinets—No Systems	379	13,945			126	6,511	
26. Total Household		\$3,886,104		\$50,818		\$607,675	

*Indicated in report as to be subtracted from totals

Commercial Unit Sales of 19 Companies in September, 1935, Total 5,971

Commercial sales for September, 1935, were reported to the National Electrical Manufacturers Association (Nema) by 19 companies, some of which are not members of the association. These reports cover the sale of units less than 1 hp. in size. Companies reporting are: Baker Ice Machine Co., Brunner Mfg. Co., Carbondale Machine Corp., Carrier Engineering Corp., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Corp., Kelvinator Corp., Leonard Refrigerator Co., Merchant & Evans Co., Norge Corp., Phoenix Ice Machine Co., Reliance Refrigerating Machine Co., Servel, Inc., Uniflow Mfg. Co., Universal Cooler Corp., Westinghouse Electric & Mfg. Co., and York Ice Machinery Corp.

SALES FOR SEPTEMBER, 1935

COMMERCIAL		Domestic		Canadian		Other Foreign	
Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1. Water Coolers Complete	625	\$ 62,771	6	\$ 649	64	\$ 7,337	
2. Water Coolers Remote	54	4,018			9	617	
3. Ice Cream Cabinets Complete	330	35,721	1	147	297	30,406	
4. Ice Cream Cabinets Remote	182	25,757	1	77	10	1,462	
5. Beverage Coolers Comp.	789	58,960	5	335	41	3,078	
6. Beverage Coolers Remote	97	7,076					
7. Less than 1/2 Hp.	367	17,974	2	134	129	8,134	
8. 1/2 to 1 Hp.	1,791	158,412	33	3,365	840	75,675	
9. Above 1/2 and Less Than 1 Hp.	519	67,241	17	2,352	117	15,250	
10. Total Lines 7, 8, and 9	2,677		52		1,086		
11. Total Lines 1, 3, 5, 10	4,419		64		1,488		
12. Evaporators	3,549	97,927	79	3,153	874	22,973	
13. Miscellaneous Cases and Cabinets	33	7,465	4	200	5	1,260	
14. Total Commercial		\$543,322		\$10,412		\$166,192	

11,492 Household Units Sold in New York In September

The following report of sales by 14 manufacturers of household electric refrigerators is a distribution by states of their sales for September, 1935. The companies reporting are listed above.

States and Territories	Quantity of Household Low Sides
Alabama	378
Arizona	114
Arkansas	185
California	5,923
Colorado	156
Connecticut	978
Delaware	92
Dist. of Columbia	425

Florida	1,497
Georgia	660
Idaho	160
Illinois	2,146
Indiana	780
Iowa	311
Kansas	297
Kentucky	396
Louisiana	391
Maine	188
Maryland	542
Massachusetts	2,429
Michigan	1,660
Minnesota	641
Mississippi	152
Missouri	1,068
Montana	189
Nebraska	212
Nevada	46
New Hampshire	239
New Jersey	2,397
New Mexico	44
New York	11,492
North Carolina	288
North Dakota	56
Ohio	2,700
Oklahoma	165
Oregon	481
Pennsylvania	3,422
Rhode Island	316
South Carolina	241
South Dakota	63
Tennessee	813
Texas	1,492
Utah	160
Vermont	107
Virginia	502
Washington	1,019
West Virginia	299
Wisconsin	498
Wyoming	56

Total United States	48,796
Canada	771
Other Foreign (Incl. U. S. Possessions)	8,538
Total for World	58,105

Industry Sales for First Nine Months Total 1,529,522

(Concluded from Page 1, Column 5)

as reported by the 14 member companies of the Household Refrigeration Section of the National Electrical Manufacturers Association (Nema), totaled 58,105 units.

For the first nine months of 1935, Nema member companies have sold 1,392,057 household electric refrigerators, as compared with 1,124,975 units during the same period of last year. At the same time, total sales by the whole industry have gone 256,950 past the 1,272,600 estimated for the first nine months of last year.

At the end of August, it will be remembered, estimated sales had reached 1,465,700 units, a greater number than the all-time yearly record of 1,390,600 sold in all of 1934.

In the sales-by-states tabulation of shipments to dealers and distributors, New York again led all the rest by a wide margin, figures for the month in that territory totaling almost 24 per cent of all the refrigerators shipped. California was second, Pennsylvania third, and Ohio fourth.

Reports from 19 member companies of the Commercial Refrigeration Section of National Electrical Manufacturers Association showed world sales of commercial condensing units by these companies during August to total 5,971 units, a drop of about 40 per cent from the 10,381 unit sales reported by the same companies for August.

Companies reporting to the Household Refrigeration Section for September were Apex, Crosley, Frigidaire, General Electric, Gibson, Kelvinator, Leonard, Norge, Servel, Stewart-Warner, Sunbeam, Uniflow, Universal Cooler, and Westinghouse. Nema members not reporting were Jomoco, Merchant & Evans, and Sparks-Withington. Refrigeration units made by Nema members for Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp. (Nema member), Sears, Roebuck & Co., and Truscon Steel Co. are included in the Nema total.

Companies reporting September sales to Nema's Commercial Refrigeration Section include Baker, Brunner, Carbondale, Carrier, Crosley, Frigidaire, General Electric, Gibson, Kelvinator, Leonard, Merchant & Evans, Norge, Phoenix, Reliance, Servel, Uniflow, Universal Cooler, Westinghouse, and York.

Portable Elevator Co. Markets Food and Beverage Cooler

BLOOMINGTON, Ill.—Portable Elevator Mfg. Co. here has just brought out a combination beverage and food cooler, using mechanical refrigeration, and applicable for use by restaurants, taverns, road houses, refreshment stands, pool rooms, bowling alleys, resorts, delicatessens, bakeries, and creameries.

The Pemco food-beverage cooler, as it is called, is made in three models, of all-steel galvanized construction, with electrically welded joints. Door and lids are sealed with heavy cushion rubber gaskets. Hardware is of solid brass, chromium plated.

Model 74 is 43 1/2 in. high, 32 in. wide, and 21 in. deep. It has a capacity of 148 bottles, 74 in the top and the same number in the lower compartment. If desired, the lower compartment may be used for food. Cubic capacity of the upper compartment is 2.8 ft.; of the lower compartment, 3.3 ft.

Model 112 has dimensions of 43 1/2 in., 38 1/2 in., and 32 1/2 in., and will hold 224 bottles, 112 in each of the upper and lower compartments. Capacity of the upper compartment is 3.9 cu. ft., and of the lower, 4.6 cu. ft.

Model M100, designed primarily for creameries and milk depots, holds 100 quart bottles of milk in both compartments, or 50 quarts in the top and storage space for butter, eggs, or cottage cheese in the bottom. If used for beer storage, the cooler will hold 21 cases. Dimensions of the model are 45 in. high, 52 in. wide, and 26 1/2 in. deep. Capacity of the upper compartment is 5.6 cu. ft.; of the lower compartment, 6.6 cu. ft.

Refrigerating units in all models are of the conventional type, the larger one being powered by a 1/2-hp. motor, while the two smaller ones use motors of 1/4 hp. Kimsul insulation 2 in. thick on all sides, 2 1/2 in. in the bottom, is used in the two smaller size coolers, and the larger model has 3 in. of insulation on sides and door, and 4 in. in the bottom.

Model Funeral Chapel Is Cooled by Lipman

CLEVELAND — Morticians and funeral directors viewed a model chapel, cooled with Lipman air-conditioning equipment, at the National Convention of Funeral Directors held here recently.

Exports of Electric Refrigerators

September, 1935, Shipments Reported by the Bureau of Foreign and Domestic Commerce, Washington, D. C.

	Electric Household Refrigerators		Electric Commercial Refrigerators Up to 1 Ton		Parts for Electric Refrigerators	
	Number	Value	Number	Value	Value	Value
Austria	18	\$ 992	2	\$ 266	\$ 1,627	
Azores & Maderia Islands	4	302	...	...	...	...
Belgium	84	8,089	17	1,326	7,514	
Czechoslovakia	3	270	...	...	5,861	
Denmark	1	84	...	...	387	
Finland	3	350	20	1,805	833	
France	673	45,102	335	28,276	35,208	
Germany	...	...	...	...	523	
Gibraltar	5	416	5	649	764	
Greece	2	242	10	1,865	981	
Hungary	...	...	...	...	105	
Irish Free State	26	1,874	14	1,336	94	
Italy	3	220	...	...	1,762	
Latvia	1	300	...	...	...
Netherlands	22	1,090	1	45	5,559	
Norway	15	1,728	5	799	2,242	
Poland & Danzig	2	151	...	...	190	
Portugal	31	1,936	...	...	646	
U.S.S.R. (Russia, Europe & Asia)	1	92	...	...	...
Spain	36	2,743	24	2,824	2,410	
Sweden	233	17,824	13	1,858	11,923	
Switzerland	39	3,134	...	...	6,285	
United Kingdom	188	12,379	251	14,530	31,923	
Yugoslavia	...	...	...	...	645	
Canada	99	6,381	8	1,552	14,366	
British Honduras	3	216	...	...	42	
Costa Rica	2	287	...	...	...
Guatemala	16	1,590	...	...	342	
Honduras	7	884	1	114	19	
Nicaragua	1	175	...	...	138	
Panama	71	8,379	20	3,977	5,909	
Salvador	3	235	...	...	39	
Mexico	172	15,649	10	2,501	3,919	
Newfoundland & Labrador	...	...	...	...	69	
Bermuda	36	3,106	1	113	168	
Barbados	12	1,187	1	538	...	
Jamaica	13	1,254	1	112	1,174	
Trinidad & Tobago	11	1,080	1	101	32	
Other British West Indies	18	1,860	2	192	272	
Cuba	348	29,655	8	1,456	9,407	
Dominican Republic	19	1,359	...	...	65	
Netherlands West Indies	46	4,446	...	...	748	
French West Indies	16	1,343	1	120	37	
Haiti, Republic of	12	1,037	...	...	206	
Argentina	364	16,547	6	729	15,621	
Brazil	1,182	70,735	...	...	4,753	
Chile	153	14,374	49	4,363	621	
Colombia	131	11,817	19	2,343	1,204	
Ecuador	11	742	...	...	102	
British Guiana	2	188	...	...	152	
Surinam	2	241	...	...	...
Paraguay	19	1,893	...	...	33	
Peru	46	5,620	7	1,135	608	
Uruguay	1	180	6	942	868	
Venezuela	154	13,149	3	356	121	
British India	48	3,896	24	3,482	6,228	
British Malaya	80	6,636	3	715	1,198	
Ceylon	14	1,356	6	481	79	
China	7	968	...	...	712	
Netherlands India	263	23,747	9	1,672	3,834	
French Indo-China	40	2,953	...	...	988	
Hong Kong	77	7,928	3	473	596	
Japan	...	...	15	1,784	1,653	
Kwantung	...	...	6	394	189	
Palestine	83	7,390	76	9,171	7,746	
Philippine Islands	188	19,246	15	2,027	4,088	
Slam	12	1,327	...	...	97	
Syria	3	225	...	...	...
Turkey	12	957	20	2,620	1,029	
Australia	1,245	62,851	9	1,275	56,917	
French Oceania	...	...	1	118	32	
New Zealand	696	58,727	54	5,860	7,482	
Belgian Congo	11	1,041	...	...	14	
British East Africa	11	1,062	...	...	221	
Union of South Africa	2,375	196,146	21	2,117	7,230	
Other British South Africa	14	1,272	...	...	...
Gold Coast	8	541	...	...	459	
Nigeria	18	1,901	...	...	145	
Other British West Africa	...	...	...	...	9	
Egypt	36	3,502	...	...	414	
Algeria & Tunisia	55	4,866	7	753	2,987	
Madagascar	9	744	...	...	...
Other French Africa	32	3,382	...	...	11	
Liberia	3	425	...	...	...
Morocco	27	2,260	...	...	478	
Mozambique	13	1,225	...	...	24	
Other Portuguese Africa	1	54	...	...	...
Canary Islands	40	3,204	...	...	212	
Other Spanish Africa	10	814	...	...	113	
Total	9,789	\$735,583	1,110	\$109,165	\$283,732	
Shipments to Hawaii	512	53,480	24	3,437	6,564	
Puerto Rico	310	30,384	37	5,780	8,264	
Virgin Islands	2	226	...	...	6	

MASTER SERVICE MANUAL

Chapter 9—Service

Methods of Servicing Type '1A' Refrigeration Systems

By K. M. Newcum

78. Service Operations on Type 1A System

The foregoing complaints, in a general way, cover most of the major difficulties. The explanation and diagnosis lead to the methods of correcting the complaints.

The following service operations cover the actual procedure of making the necessary service repairs to the system to correct the cause of the complaint.

In order to simplify the explanation of procedure in the service operations, all operations will be written on the assumption that the combination gauge set is installed as shown in Fig. 135; that valves No. 6 and No. 7 are closed; that valves No. 1 and No. 2 are cracked off the back seat, so that both the high and low pressures are registering on their respective gauges.

This would represent the actual arrangement of valves if the combination gauge set were installed immediately upon arrival at the job, and both pressures taken in diagnosing the trouble.

It is necessary to point out that in the system type 1A as shown in Fig. 135 the low pressure bellows is connected with the crankcase. With this arrangement, the normal operating position of valve No. 1 would be back seated.

On certain Frigidaire models and some other makes the low pressure bellows is connected into one side of a tee, which is installed in the gauge part of valve No. 1. (See Fig. 75, Chapter 4.) The other side of the tee is capped off with a flare nut and seal bonnet, when the gauges are not installed. In this case the normal operating position of valve No. 1 is cracked off the back seat, so that the pressure from the low side may respond on the bellows.

To further simplify the service procedure and to avoid confusion and

repetition, when instruction is given to back seat valve No. 1 to its normal operating position it is to be assumed that where the low pressure bellows is connected into a tee in the gauge float, that valve No. 1 must be cracked off the back seat for normal operation, before leaving the job. If the low pressure control is connected into the crankcase as in Fig. 135, the correct operating position of valve No. 1 is back seated.

Service Operation No. 1. Evacuating the Liquid Line

a. Close valve No. 3.
b. Operate compressor for about 10 minutes. As liquid leaves the liquid line it will become cold near valve No. 3. When it again warms up to room temperature, close valve No. 4 and stop compressor.

c. Loosen liquid line flare nut at valve No. 3. If no refrigerant escapes the line is evacuated. If an appreciable quantity of refrigerant escapes, tighten flare nut. Start compressor, open valve No. 4 and run compressor for another 10 minutes. Then close valve No. 4, stop compressor and again loosen flare nut at valve No. 3.

Service Operation No. 2. Evacuating the Suction Line

a. With compressor idle, close valve No. 5.
b. Note pressure on compound gauge. If it is around 0 lb., close valve No. 1, and line may be removed if desired.

c. If pressure is above 0 lb., turn fly-wheel by hand with valve No. 1 open to reduce pressure to 0 lb. Then close valve No. 1.

d. If pressure is below 0 lb., by-pass through combination gauge set to increase to 0 lb. Then close valve No. 1.

Service Operation No. 3. Purging Air from Liquid Line

a. With valves Nos. 3 and 4 closed and liquid line empty, loosen liquid line flare nut at valve No. 4.

b. Crack (open slightly) valve No. 3.
c. With valve No. 3 cracked open slightly, pressure from liquid receiver will blow air from liquid line.
d. When refrigerant starts escaping from liquid line at valve No. 4, tighten liquid line flare nut and close valve No. 3.

Service Operation No. 4. Purging Air from Suction Line

a. With valves Nos. 1 and 5 closed and suction line empty, loosen suction line flare nut at valve No. 1.

b. Crack valve No. 5 and pressure from evaporator will blow air from suction line.

c. When refrigerant starts escaping tighten suction line flare nut at valve No. 1 and close valve No. 5.

Service Operation No. 5. Testing for Leaks

a. Methods for detecting leaks of the various refrigerants are given in Chapter 2.

b. All joints and connections should be tested for leaks immediately after making the joint.

c. Pressures equal to or above highest normal operating pressures must exist in part of system being tested, at the time test is made.

Service Operation No. 6. Purging Air from the Condenser

a. Refer to effect of air in system and purging instructions for common refrigerants in Chapter 4.

b. Stop compressor and allow condenser to cool to room temperature.

Purging Air

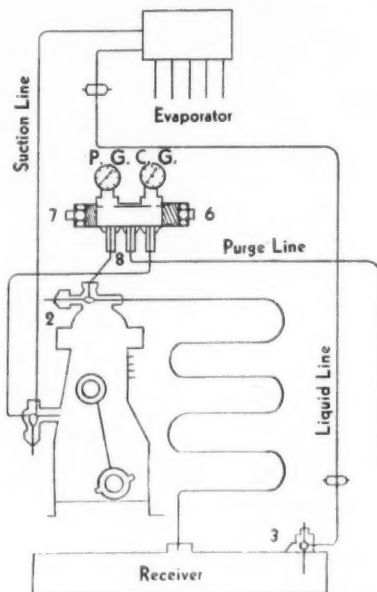


Fig. 139—Setup and connections for purging air from condenser.

c. Attach purging line to service connection No. 8.
d. Crack valve No. 7 and purge slowly for several minutes.
e. Observe pressure drop registered on pressure gauge.
f. When purging is completed, close valve No. 7 and remove purging line.

Service Operation No. 7. Adding Refrigerant to Low Side

a. Attach charging line from refrigerant cylinder to service connection No. 8. Leave cylinder standing upright.

Adding Refrigerant

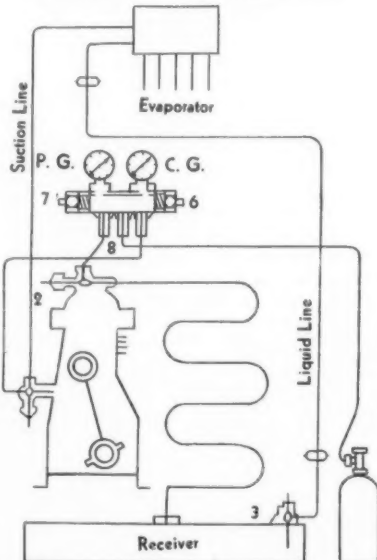


Fig. 140—Diagram illustrating valve hookup for adding refrigerant to the low side.

b. Purge charging line by loosening flare nut at cylinder valve and cracking valve No. 7 until gas escapes from loosened connection. Close valve No. 7 and tighten connection and test both charging line connections for leaks.

c. Open cylinder valve.

d. Close valve No. 1.

e. Crack valve No. 6. Put compressor into operation. Use valve

No. 6 as a throttle valve. For SO₂ and isobutane charge at about 5 lbs. back pressure. For methyl chloride and F-12 charge at around 10 lbs. back pressure.

f. Charge small quantities at a time. Close valve No. 6 and open valve No. 1 at regular intervals and check noise at float valve and normal operating pressures to determine if sufficient refrigerant has been added.

g. When sufficient refrigerant has been added, close cylinder valve. Open valve No. 6. Close valve No. 1 and allow compressor to draw pressure from charging line and combination gauge set to 0 lb. Then close valve No. 6, and open valve No. 1.

h. Remove charging line.

Note: If a large quantity of refrigerant is being drawn from cylinder, it may become cold or frosted, and the liquid will not gasify rapidly enough to maintain the recommended charging pressure. In such cases, place the cold or frosted portion of the cylinder in a shallow vessel of warm water. The cylinder should remain in the warm water only while it is connected, with the cylinder valve and valve No. 6 open and the compressor in operation.

Adding Oil

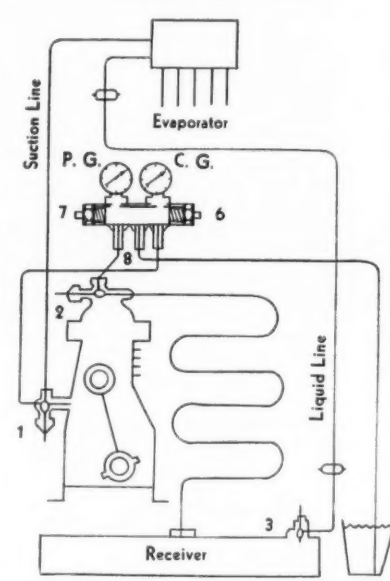


Fig. 141—Service operation No. 8, showing how oil is added to the compressor.

Service Operation No. 8. Adding Oil to the Compressor

a. Fill a clean, dry glass vessel with 50 per cent more refrigeration oil than is to be added to system.

b. Attach a 1/4-in. line to service connection No. 8.

c. Purge oil line by cracking, then closing, valve No. 7.

d. Place open end of oil line into oil vessel, all the way to the bottom.

e. Close valve No. 1 and operate compressor to 15 in. vacuum, then stop compressor.

f. Open valve No. 6 and oil will flow from container through gauge set and into crankcase.

g. When the correct amount of oil has been added, close valve No. 6 and open valve No. 1.

h. Put compressor into operation.

Service Operation No. 9. Changing the Evaporator

This operation involves removing the present evaporator and replacing it with one that is fully charged with the correct amount of refrigerant and oil.

a. Evacuate liquid line. Operation No. 1.

b. Evacuate suction line. Operation No. 2.

c. Disconnect liquid and suction lines from valves Nos. 4 and 5. Insert flare plugs in both lines to prevent dirt, air or moisture from entering.

d. Remove present evaporator from its hangers or stand, and install new one in same location and position. Check it with a level.

e. Reconnect the liquid and suction lines. Purge both lines as given in operations Nos. 3 and 4 and test for leaks as given in operation No. 5.

f. Open valves Nos. 3, 4, and 5, and put compressor into operation.

Service Operation No. 10. Flushing the Float Valve

a. Close valve No. 3.

b. Operate compressor for about 20 minutes, or until back pressure is reduced to below the cutting out point of the low pressure control. Hold low pressure control in "on" position if necessary.

c. At this point open valve No. 3 as suddenly as possible so that the liquid will rush past the needle and seat to dislodge any foreign material at that point.

d. Operate system for several minutes to see if float reseats after flushing.

e. Repeat the flushing operation several times if necessary. If flushing does not cause valve to hold, the float must be changed.

Type 1A Flooded System

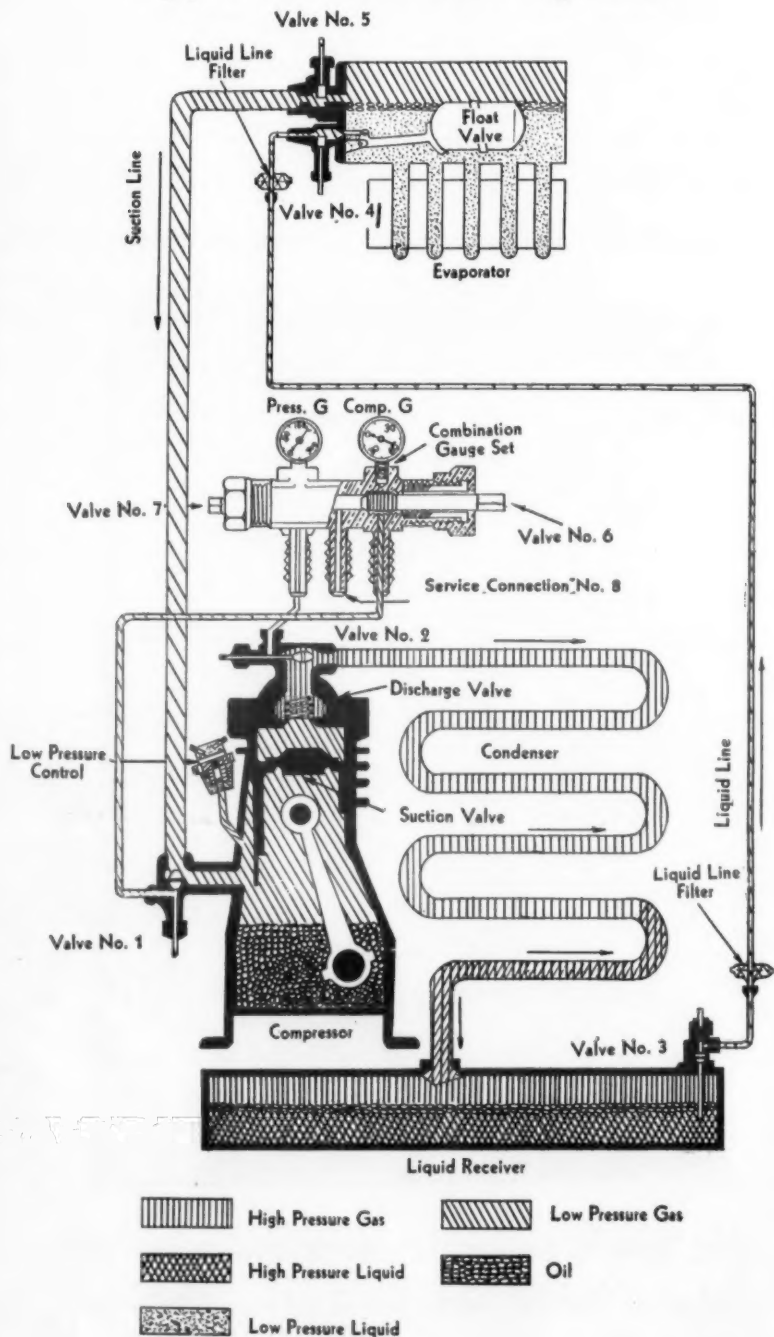


Fig. 135—Type 1A flooded system using low side float valve, low pressure control, and having two evaporator service valves (No. 4 and No. 5). Common service operations on this type of flooded system are described in this issue.

First 6 Chapters of Master Service Manual Now Available in 112-page Booklet

Published in this issue is Chapter 9, Instalment 4 ("Service of Refrigerators") of the Master Service Manual, prepared by K. M. Newcum. The manual is being published serially in Electric Refrigeration News, the first instalment appearing in the April 10, 1935, issue. When all the chapters have been published in the News, the information will be put in book form, with considerable supplementary material.

This manual of information on the design and operation of present-day refrigeration systems will add to the service man's knowledge, and will assist him in meeting specific problems in servicing operations in the field.

Our supply of some of the back issues has been sold out. In order to meet the demand for the complete series we make the following offers to service men:

(1) Send \$3.00 for a year's subscription to Electric Refrigeration News to start Aug. 25, 1935, and we will send reprints of all previous Newcum articles (the first six chapters of the book) in pamphlet form (size 6 1/4 x 8 1/2 inches).

(2) Send your advance order for a copy of the Master Service Manual, enclosing \$3.00 to pay for the complete book, when published, and we will send you free of charge, reprints of all the Newcum articles published in the News up to and including Aug. 21, 1935. These reprints are in pamphlet form size 6 1/4 x 8 1/2 inches.

Following is an outline of the subjects and the dates of the weekly issues of Electric Refrigeration News in which the material was published:

Chapter 1—THEORY OF REFRIGERATION (April 10).

Chapter 2—PRINCIPLES OF MECHANICAL REFRIGERATION (April 17).

Chapter 3—COMMON REFRIGERANTS (April 24).

Chapter 4—CONDENSING UNITS.

Instalment 1: description of various compressor parts (May 1).

Instalment 2: stuffing box seals, flywheels, and direct-connected units (May 8).

Instalment 3: rotary compressors (May 29).

Instalment 4: care and servicing of shut-off valves and gaskets (June 5).

Instalment 5: condensers (June 12).

Instalment 6: liquid receivers (July 19).

Chapter 5—EVAPORATORS.

Instalment 1: flooded evaporators with low side float valve (June 26).

Instalment 2: high side float valves and flooded evaporators (July 3).

Instalment 3: automatic expansion valves (July 10).

Instalment 4: automatic expansion valves—continued (July 17).

Instalment 5: thermostatic expansion valves (July 24).

Chapter 6—CONTROLS.

Instalment 1: low pressure controls (July 31).

Instalment 2: low pressure controls—continued (Aug. 7).

Instalment 3: thermostatic controls (Aug. 14).

Instalment 4: thermostatic controls—continued (Aug. 21).

Chapter 7—MOTORS.

Instalment 1: repulsion start-induction run motors (Aug. 28).

Instalment 2: repulsion start-induction run motors (continued) and capacitor motors (Sept. 4).

Instalment 3: direct current motors and belts (Sept. 11).

Chapter 8—INSTALLATION

Instalment 1: installation of refrigerators (Sept. 18).

Instalment 2: correct use of fittings in making joints (Sept. 25).

Chapter 9—SERVICE.

Instalment 1: classification of systems and use of combination gauge set (Oct. 16).

Instalment 2: service complaints and remedies on Type 1A flooded systems (Oct. 23).

Instalment 3: service complaints and remedies on Type 1A flooded systems—continued (Oct. 30).

Instalment 4: service operations on type 1A flooded systems (Nov. 6).

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ENGINEERING

Michigan Refrigeration Association Reports Results of Tests on Solders for Joints Made At Mueller Plant for Detroit Inspectors

The following is the published report of the Refrigeration Association of Michigan concerning the results of the tests of soldered streamlined joints which were made at the Mueller Brass Co. laboratory, Port Huron, Mich.

Tests were conducted in the presence of the following: H. H. Mills, chief safety engineer, city of Detroit; Leo Gage and J. D. Hollman, refrigeration inspectors, city of Detroit; O. B. Mueller, president, T. L. Riggin, executive vice president, L. E. Strassburg, sales manager, R. C. Hunter, Detroit representative, and J. Gray, engineering department—all of Mueller Brass Co.; A. Hafke, Kelvinator Corp.; William Barth, Frigidaire Corp.; Dayton; A. C. Ellerbusch, Frigidaire Corp., Detroit; and Frank J. Gleason, secretary, Refrigeration Association of Michigan.

From Mr. Hafke's report:

These tests were made using the following solders and all joints were made prior to each test.

Tensile Test

Specimens of streamline joints in the form of a tube and coupling were made for these tests and the tubing used was 3/4-in. O.D. .065 wall thickness hard drawn.

Solder No.	Tensile Strength Lbs.	Elastic Limit Lbs.	How Failed
1	(Previous tests indicated this gave same result as No. 2 Solder.)		
2	9,475	8,525	Tubing broke 6 in. from joint
3	5,425	3,260	Tubing broke at joint

Hydraulic Pressure Test

Samples were made in T-shape, i.e., three 8-in. lengths of tubing, one tee, two caps, and one threaded coupling with six joints on each specimen. 3/4-in. O.D. .065 wall thickness hard drawn copper tube used.

Solder No.	Pressure at Which Leak Occurred	Type of Leak or Failure
1		No tests made.
2	6,500	Small leak in solder film at joint.
Same } 3	4,000	Small leak at soldered joint. Drop of water/15 sec.
Sample } 3	5,000	Tubing split next to joint.

Analysis of Solders Used

Number	Solder Analysis	Melting Range	Mueller No.
1	50% Tin 50% Lead	358°—414° F.	50
2	95% Tin 5% Antimony	450°—460° F.	114
3	50% Silver 16 1/2% Zinc 17% Copper 16 1/2% Cadmium	1250°—1300° F.	120

The flux used with solders No. 1 and 2 is a Mueller product made up of powdered resin in petroleum jelly or olive oil with small amounts of zinc chloride and ammonium chloride. The flux used with solder No. 3 was composed of borax and water to form a paste.

A gas and air torch was used on all joints made with solders No. 1 and 2, whereas an oxyacetylene torch was used on the joints for solder No. 3.

Heat Test

This sample consisted of two 4-ft. lengths approximately 3/4-in. O.D. .025 wall thickness hard drawn copper tubing. Two open ends were connected together by a U-shaped return bend with streamline joints. The other ends were connected in series with a water jacketed condenser through which water was circulated to control the pressures generated. The tube and condenser were then charged with a quantity of dichlorodifluoromethane (Freon) refrigerant.

A localized heat condition was set up on the joint (U-shaped return bend on which streamlined joints had been made). This heat was generated in a small oven with a gas torch and the oven air temperature was indicated on a pyrometer with the thermocouple placed in the immediate vicinity of the soldered joints on the return bend within the oven.

The gas torch ignited resulted in a temperature rise of approximately 250° F. per minute for the first five minutes, 100° F. per minute for the following 4 1/2 minutes, after which time a constant temperature was obtained.

Refrigerant pressure measured by a 200-lb. gauge exceeded the limit of the gauge; however, it was estimated to be 280 lbs./sq. in. which was held constant during the entire heating period.

The two types of joints were tested in the above manner. One made with No. 1 solder (50-50) and one with No. 2 solder (95-5). Results are as follows:

Solder	Total Time of Heat Applied	Refrigerant Pressure Lbs. Sq. In. Ga.	Maximum Temperature ° F.	How Failed
No. 1	30 min.	280	1,700	No failure
No. 2	20 min.	280	1,400	No failure

Neither type joint showed any indication of leaking or blowing loose from internal refrigerant pressure. After discontinuing the heat, the tube and joints were from visual inspection almost to red heat.

There was insufficient time to actually determine the reason for this joint not failing, but it is the writer's opinion that the high temperature produced a tin copper alloy in the solder film resulting in a considerable increase in the melting point of the solder film which thickness was from .001 in. to .0015 in.

Further investigation, however, is being made in this regard to determine the reaction that takes place. It was the general opinion of the group that this above test was not essential on silver soldered joints.

The hydraulic samples were transversely cut on the joint, polished, and inspected under microscope for crystalline structure.

The soft soldered joints made with No. 2 solder showed no change from the original hard drawn structure; however, the hard soldered joint showed a complete recrystallization and marked grain growth indicating a completely softened condition.

The conclusions from these tests indicate that hard soldered joints on hard drawn copper tubing results in a 42.5 per cent loss of mechanical strength in the tubing and a reduction of 38.4 per cent in possible joint failure. Hard solder would increase the number of possible leaks and the additional hazard of the use of acetylene torches to complete such work would always be present.

From Mr. Ellerbusch's report:

Soldered Joint Test

The first test was made with 1/2-in. hard drawn copper tubing, type "M." The assembly was soldered with 50-50 solder in a trombone shape, and a pressure gauge was installed in the assembly, together with a small water-cooled type condenser.

This assembly was charged with approximately 2 lbs. of Freon refrigerant and one end was then placed in a small furnace, the temperature of which was 1,725° F. The pressure inside the tubing rose to 260 lbs.

The assembly was kept in this furnace for 30 minutes. It was then removed and found that the joints were in perfect condition and that there were no leaks present. A similar test was run in the morning using the same tubing, but the joints were soldered with 95-5 solder, and the same results were obtained.

Pull Test

A pull test was then made using 3/4-in. hard drawn copper tubing, type "K." the joints being soldered with 95-5 solder. The tubing pulled apart at 9,475 lbs. The joints, however, were found to be in very good condition.

Solder	Total Time of Heat Applied	Refrigerant Pressure Lbs. Sq. In. Ga.	Maximum Temperature ° F.	How Failed
No. 1	30 min.	280	1,700	No failure
No. 2	20 min.	280	1,400	No failure

Then a test was made using 3/4-in. hard drawn copper tubing, type "K." but the joints were soldered with No. 122 silver solder. On this test the tubing broke at 5,425 lbs., and the point was made that this tubing broke at a much less tension because the tubing was annealed from the extreme heat which was applied in making the silver soldered joints.

Pressure Test

An assembly was then made up, filled with water, and placed upon a machine for a pressure test. The first assembly was of type "K" hard drawn copper tubing soldered with 95-5 solder. Pressure was then applied and the tubing broke at 6,500 lbs. pressure.

A second assembly was made up

similar to the first with the exception that the joints were soldered with No. 122 silver solder. This assembly burst at 5,000 pressure. This difference in pressure was again due to the fact that the tubing was annealed from the extreme heat applied in silver soldering the joints.

A trip was then made through the Mueller Brass Co.'s mill to show those present just how hard drawn copper tubing was made.

The Mueller Brass Co. certainly should be commended on their fine demonstration because they certainly kept their tests pointed to the fact that silver solder did not make an installation safer, but rather made the tubing weaker both from a pressure and a pull standpoint.

It also brought out the fact that when tubing is filled with Freon, extraordinary temperatures can be applied to the tubing and still not rupture any of the joints.

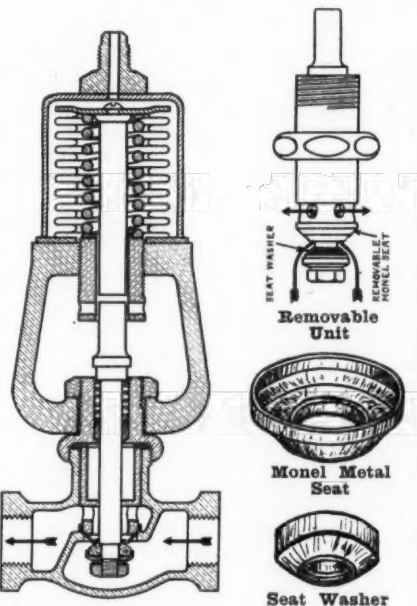
The first two tests mentioned in this article were conducted with type "M" hard drawn copper tubing which has a .025 wall thickness, and is the next size thinner than type "L," which is the type which we have been using.

Monel Metal Seat Used In Regulator Valve

CHICAGO—Featured by a Monel metal seat, a new pressure-actuated automatic condensing water regulator has been introduced by the Art Valve Co. here.

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Automatic Valve



Cross section of pressure actuated automatic condensing water regulator.

closer the contact between the washer and the Monel metal seat.

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Norge Oil Burner to Heat 3-Story Building

BALTIMORE — New three-story brick structure of Nevenson & Klein, refrigerator, radio, and furniture dealer here, will be equipped with a Norge oil burner, which will be installed by the Norge Engineering Corp. of Maryland, subsidiary of Joseph M. Zamoiski Co., Norge distributor here. Total cost of the new store is estimated at \$75,000.

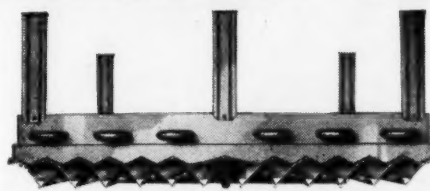
5 Crosley Salesmen Exceed Quota by 122 Per Cent

LOUISVILLE—Five salesmen of the Cooper-Louisville Co., Crosley distributor here, have already exceeded their year's quota on Crosley Shelvador electric refrigerators by 122 per cent. J. E. Johnson, president, reports. Names of the men are: H. O. Thomas, southern Indiana; J. S. Ditty, western Kentucky and southern Indiana; H. M. Weber, central Kentucky; J. J. Crider, Blue Grass section; and S. J. Rapier, Louisville.

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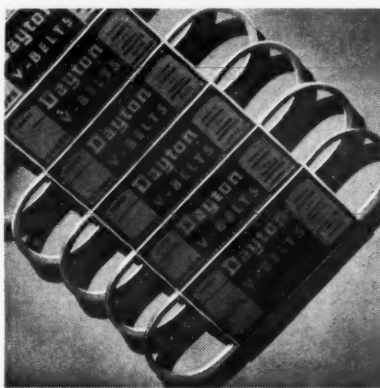
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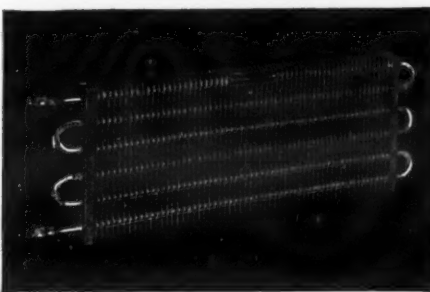
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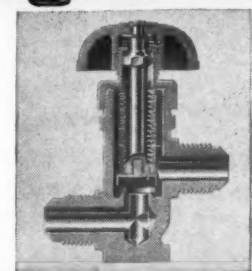


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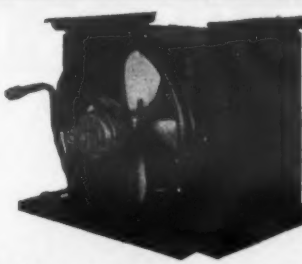
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Vol. 8—Jan. 4 to April 26, 1933. (Serial Nos. 198 to 214.)
Vol. 9—May 3 to Aug. 30, 1933. (Serial Nos. 215 to 232.)
Vol. 10—Sept. 6 to Dec. 27, 1933. (Serial Nos. 233 to 249.)
Vol. 11—Jan. 3 to April 25, 1934. (Serial Nos. 250 to 266.)
Vol. 12—May 2 to Aug. 29, 1934. (Serial Nos. 267 to 284.)
Vol. 13—Sept. 5 to Dec. 26, 1934. (Serial Nos. 285 to 301.)
Vol. 14—Jan. 2 to April 24, 1935. (Serial Nos. 302 to 318.)

Price \$3.00 per volume, f.o.b. Detroit. Shipment will be made by express collect unless otherwise specified. Please send remittance with order.

Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

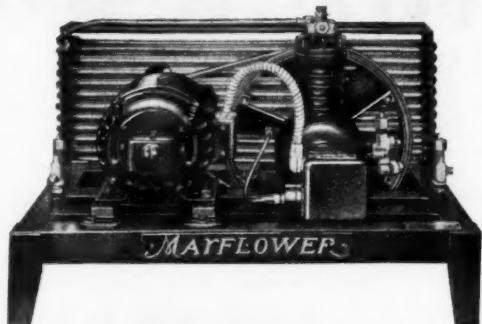
BUYER'S GUIDE

MANUFACTURERS SPECIALIZING IN SERVICE
TO THE REFRIGERATION INDUSTRY

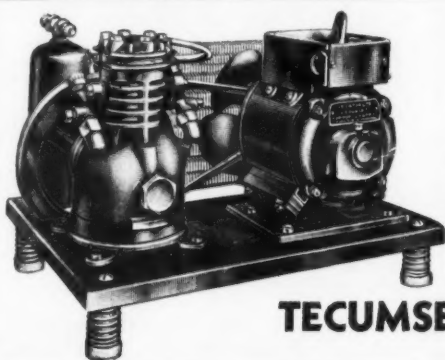
HARDY "Mayflower" Compressors

exclusively manufactured for
Commercial use, are the units
which have long met with
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For dependability and genuine
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HARDY MANUFACTURING CO., Inc., 100 Davis Ave., Dayton, Ohio



"CHIEFTAIN" QUALITY-BUILT COMPRESSORS and CONDENSING UNITS

All bearings diamond bored. Positive
lubrication of piston by newly de-
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lubrication in all models.

Sizes: 1/6, 1/5, 1/4, 1/3 h.p.

Write for prices

TECUMSEH PRODUCTS CO.

Tecumseh, Mich.



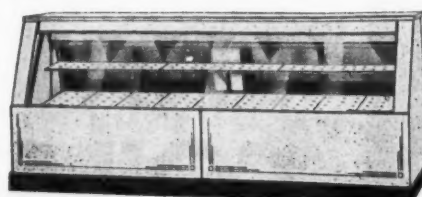
CONDENSING UNITS AND COMPRESSORS FOR HOUSEHOLD REFRIGERATION BY

JOMOCO, INC.

A SUBSIDIARY OF THE
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CABLE ADDRESS: JOMOCO-WAUKEGAN

"DRY-KOLD", A COMPLETE LINE!



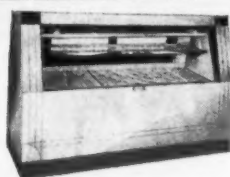
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Complete Market Equipment

Refrigerators for Hotels,
Restaurants, Florists,
Delicatessens

Furnished with coils or without

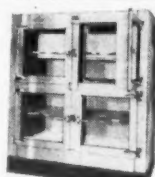
Territory open for good dealers

The "DRY-KOLD" REFRIGERATOR CO., Niles, Michigan



KOCH COMMERCIAL REFRIGERATOR CABINETS

Whether it's a display case, a reach-in
refrigerator, a walk-in cooler, or some
special, made to order job, KOCH
Equipment is consistently constructed to
the same high standards. Frame, insulation,
porcelain exterior—every part is
accurately fabricated for perfect performance.



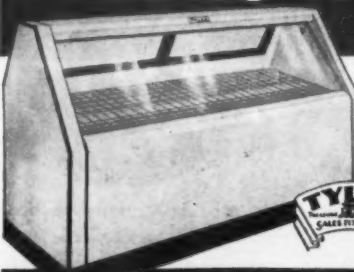
WANTED

DISTRIBUTORS AND SALES AGENTS
Attractive sales proposition. Some good territories available.
Many exclusive features. Write for information, and
submit your qualifications.

KOCH REFRIGERATORS

North Kansas City, Mo.

TYLER'S NEW WELDED STEEL REFRIGERATOR CASES



At last a general purpose case at a sensible price.
Offers every advantage of the most costly cases at
tremendous savings. Modern in every detail. Comes
equipped with coils. Single and double duty models.

AN AMAZING VALUE

Hundreds in use. Every store and market a prospect.
Home Equipment Company, Fort Wayne, Ind., sold
nine cases in two weeks. Write or wire for all the facts.

TYLER Sales Fixture CO., Dept. E, Niles, Michigan

3 INCH INSULATION-TRIPLE GLASS

PURO ELECTRIC WATER COOLERS

Thoroughly reinforced all steel attractively
finished cabinets.

Different models of varying capacities.

Write for details and sales prices.

Puro Filter Corporation of America

440 Lafayette Street, New York City

Spring 7-1800

EARNINGS

Crosley Radio Corp.

A net profit of \$364,407 was reported
by Crosley Radio Corp., and sub-
sidiaries for the six months ended
Sept. 30, equal to 67 cents a share on
545,800 no par capital shares, against
\$412,962, or 75 cents a share in the
corresponding period of last year.

Stewart-Warner Corp.

Stewart-Warner Corp. reports con-
solidated net income of \$1,329,423 for
the nine months ended Sept. 30, 1935,
after deduction of all expenses includ-
ing depreciation and reserve for fed-
eral taxes.

This is equivalent to \$1.07 a share on
the 1,241,187 shares of common stock
outstanding in the hands of the pub-
lic Sept. 30, 1935, and represents
a gain of 135 per cent over net profit
of \$565,782 reported for the nine
months to Sept. 30, 1934, which was
equivalent to 45 cents a share on the
1,246,187 shares of common stock
then outstanding.

For the three months ended Sept.
30, 1935, consolidated net profits after
all charges, were \$308,931, equivalent
to 25 cents a share. In the three
months to Sept. 30, 1934, net profits
were \$25,523, or 2 cents a share on
the outstanding stock.

Net sales for the nine months ended
Sept. 30, 1935, were \$15,887,194, as
compared with \$13,131,884, for the
first nine months of 1934, an increase
of 21 per cent. For the three months
ended Sept. 30, 1935, net sales were
\$4,881,634, as compared with \$3,891,200
in the corresponding three months of
1934, or a gain of 25 per cent.

Commenting on the earnings for the
nine months, Jos. E. Otis, Jr., presi-
dent, stated:

"It is interesting to note that this
improved showing has been made
despite the fact that severe price
competition in the automobile field
has adversely affected profits from
original Alemite equipment and in-
strument sales, as compared with last
year.

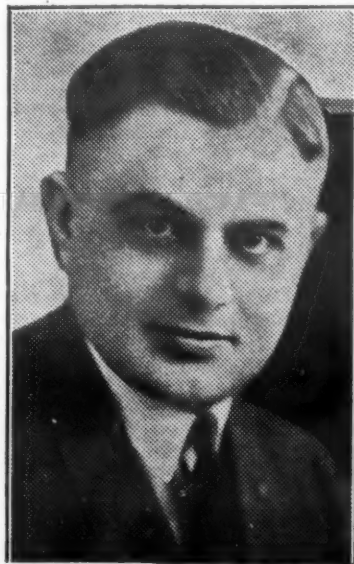
"Particular improvement has been
registered by the radio and refrigera-
tion divisions, which in the first nine
months of this year showed a sub-
stantial cash gain to the company,
as compared with cash losses in the
corresponding period in 1934, amount-
ing to several hundred thousand dol-
lars.

"October sales to date show im-
provement both over September of
this year and October a year ago,
and with the earlier production
schedules for the large automobile
manufacturing companies, our fourth
quarter should be fairly active."

Consolidated balance sheet at Sept.
30, 1935, shows current assets of
\$8,059,465 including cash of \$2,875,074,
as compared with current liabilities of
\$1,381,494, a ratio of 5.8 to 1. On Sept.
30, 1934, cash totaled \$629,075, with a
ratio of 4.2 to 1.

Directors of the company recently
declared a regular semi-annual divi-
dend payment of 25 cents a share,
together with an extra payment of
25 cents a share, both payable Dec. 2
to stockholders of record Nov. 1.
This is the first dividend declaration
by the Stewart-Warner Corp. since
November, 1930.

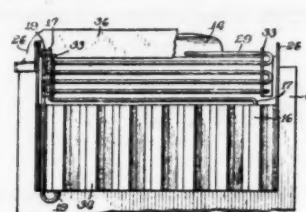
Operates 6 Stores



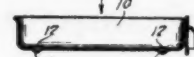
CARL J. ANDRAE

MILWAUKEE—Carl J. Andrae,
head of the Andrae Auto Supply Co.,
new distributor of Kerotest products
here, has the following men in charge
of his six stores:

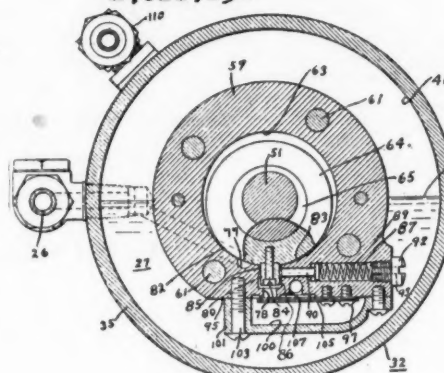
William Warth, Andrae Auto Sup-
ply Co., main branch, Milwaukee;
Edgar Damman, Madison, Wis.; Wal-
ter Dettmann, Green Bay, Wis.; U. R.
Ziesler, Manitowoc, Wis.; Paul Grim,
West Allis, Wis.; and Erwin Zeiger,
Milwaukee.



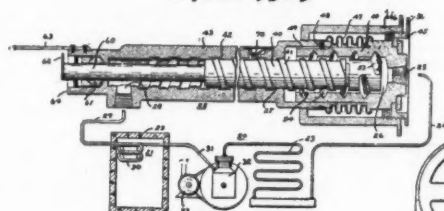
2,018,139



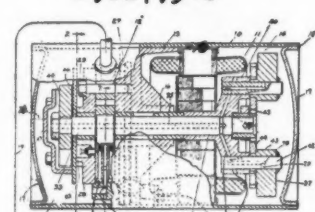
2,018,252



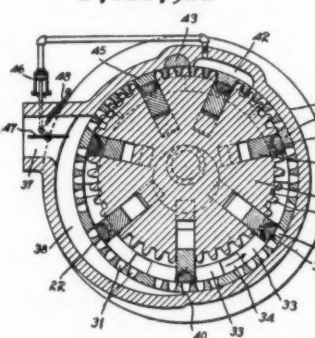
2,018,515



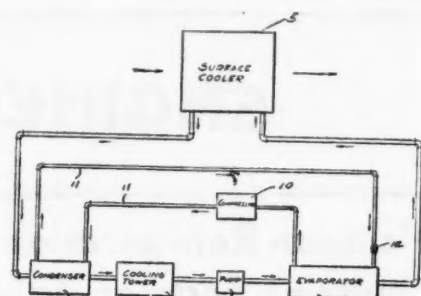
2,017,946



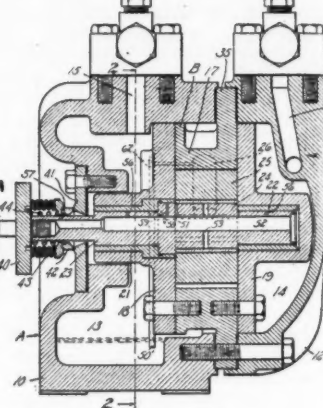
2,018,521



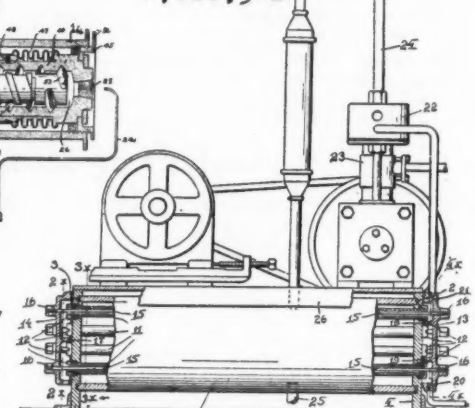
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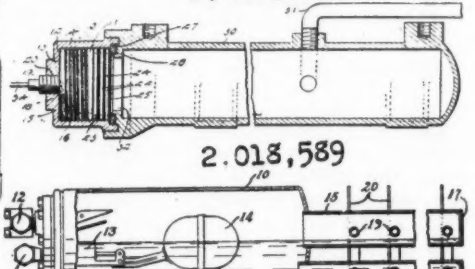
2,018,453



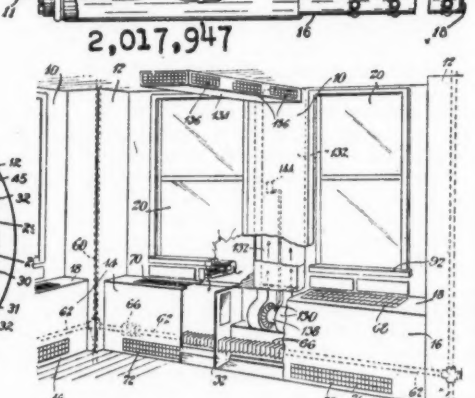
2,018,341



2,018,067



2,018,589



2,018,236

PATENTS

Issued Oct. 22, 1935

2,017,946. REFRIGERATION. Robert R.
Candor, Dayton, Ohio, assignor, by mesne
assignments, to General Motors Corp., a
corporation of Delaware. Application April
28, 1932. Serial No. 608,026. 10 Claims. (Cl.
62-127.)

2,017,947. REFRIGERATING APPA-
RATUS. Harry T. Chamberlain, Dayton,
Ohio, assignor, by mesne assignments, to
General Motors Corp., a corporation of
Delaware. Application Nov. 30, 1927. Serial
No. 236,726. Renewed July 25, 1933. 23
Claims. (Cl. 62-126.)

2,018,067. CONDENSER FOR REFRIG-
ERATING UNITS. Maxwell R. Karge,
Brockport, N. Y. Original application April
16, 1932. Serial No. 605,682. Divided and
this application May 15, 1934. Serial No.
725,680. 7 Claims. (Cl. 257-43.)

2,018,139. REFRIGERATING APPA-
RATUS. Carl E. L. Lipman, Chicago, Ill.,
assignor to Lipman Patents Corp., Chicago,
Ill., a corporation of Delaware. Application
April 8, 1933. Serial No. 665,070. 5 Claims.
(Cl. 62-116.)

2,018,236. AIR CONDITIONING SYS-
TEM. James A. Space, East Orange, N.
J., assignor to Doherty Research Co.,
New York, N. Y., a corporation of Dela-
ware. Application April 14, 1931. Serial
No. 529,911. 16 Claims. (Cl. 257-8.)

2,018,252. REFRIGERATOR TRAY.
Frank Gordon A. Cruickshank, Philadel-
phia, Pa. Application June 11, 1934. Serial
No. 730,048. 1 Claim. (Cl. 62-108.5.)

2,018,341. ROTARY COMPRESSOR.
Harry M. Badger, New Britain, Conn.,
assignor to Landers, Frary & Clark, New
Britain, Conn., a corporation of Connecti-
cut. Application Aug. 12, 1933. Serial No.
684,833. 3 Claims. (Cl. 230-207.)

2,018,391. ROTARY COMPRESSOR
UNIT. Joseph E. Whitfield, Butler, Pa.
Application Nov. 18, 1933. Serial No. 698-
647. 3 Claims. (Cl. 230-140.)

2,018,453. COOLING OF AIR BY RE-
FRIGERATION. Matthew M. Lawler,
Beverly Hills, Calif., assignor to The
Cooling and Air Conditioning Corp., Bos-
ton, Mass., a corporation of New York.
Application March 6, 1934. Serial No.
714,219. 4 Claims. (Cl. 62-129.)

2,018,515. REFRIGERATING APPA-
RATUS. Ralph W. Doeg, Detroit, Mich.,
assignor to Kelvinator Corp., Detroit,
Mich., a corporation of Michigan. Application
Sept. 9, 1932. Serial No. 632,347. 2
Claims. (Cl. 230-147.)

2,018,521. REFRIGERATING APPA-
RATUS. Edward Heitman, Detroit, Mich.,
assignor to Kelvinator Corp., Detroit,
Mich., a corporation of Michigan. Application
Feb. 13, 1933. Serial No. 656,415. 5
Claims. (Cl. 230-139.)

2,018,589. REFRIGERATING APPA-
RATUS. George F. Woelfel, Madison, Fla.,
assignor to The Commercial Cleaning
Corp., Jacksonville, Fla., a corporation of
Florida. Application Jan. 10, 1929. Serial
No. 331,678. Renewed Nov. 20, 1934. 13
Claims. (Cl. 62-127.)

BUYER'S GUIDE

MANUFACTURERS SPECIALIZING IN SERVICE
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1 subscription	\$3.00	\$5.00	\$6.00
5 or more each	2.75	4.75	5.75
10 or more each	2.50	4.50	5.50
20 or more each	2.25	4.25	5.25
50 or more each	2.00	4.00	5.00

1935 Refrigeration and Air Conditioning Directory or 1935 Refrigeration and Air Conditioning Market Data Book or Master Electric Refrigeration Service Manual (to be published Jan. 1, 1936)

1 copy	\$3.00	\$3.50	\$3.50*
5 or more each	2.75	3.25	3.25*
10 or more each	2.50	3.00	3.00*
20 or more each	2.25	2.75	2.75*
50 or more each	2.00	2.50	2.50*

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Electric Refrigeration News and all 3 books	\$7.50	\$10.00	\$12.00*
Electric Refrigeration News and any 2 books	6.50	9.00	11.00*
Electric Refrigeration News and any 1 book	5.00	7.50	9.00*
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*Canadian subscribers are required to pay a tariff and excise tax on the Directory, Market Data Book, and the Master Service Manual of approximately 50 cents per book. These charges on books will be collected by the Canadian postoffice at the time of delivery.

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5229 Cass Ave., Detroit, Mich.

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☐ Enter my subscription to Electric Refrigeration News for one year (52 issues), and send me one of the above books. State which (.....) Enclosed find remittance.*

☐ Enter my subscription to Electric Refrigeration News for one year (52 issues), and send me two of the above books. State which two (.....) Enclosed find remittance.*

☐ Enter my subscription to Electric Refrigeration News for one year (52 issues), and send me all three of the above books—the Directory, the Market Data Book, and the Master Service Manual. Enclosed find remittance.*

☐ Enter my advance order for the Master Service Manual, to be published about Jan. 1, 1936, and send me a free copy of the 112-page booklet containing the first six chapters as published in the weekly issues of Electric Refrigeration News from April 10 to Aug. 21, 1935. Enclosed find remittance.*

*See rates above.

Name
Attention or }
In care of }

Street
City State

Remarks
(Please indicate products sold or principal line of business.)

11-6-35

QUESTIONS

Air-Conditioning Firms

No. 2548 (Reader, Texas)—“We are interested in securing the names of manufacturers of air-conditioning units, compressors, etc. for conditioning the air in cabinets about 5 ft. square by 18 in. high. Will you please send to us the names of such manufacturers?”

“Is there a refrigerating and air-conditioning directory containing a list of such manufacturers?”

Answer: All manufacturers of refrigeration and air-conditioning equipment, and all parts for same are published in the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

This directory is published for the purpose of answering such questions, as it is impossible for us to prepare individual lists in answer to the thousands of requests for such information. The book is divided into four sections:

- (1) alphabetic list of manufacturers;
- (2) index of trade names; (3) classified list of refrigeration equipment;
- (4) geographical directory giving name, address, telephone number, products, and executive personnel of the various manufacturers. Also included is a separate section listing independent service companies of which we have a record, and jobbers of supplies, parts, and materials.

Dependo Fin Coils

No. 2559 (Exporter, New York)—“As subscribers of your weekly, we take the liberty of asking you whether you can give us the name of the manufacturer of Dependo solid fin coil.”

“We do not find the name Dependo listed in the directories and are wondering whether you know of coils manufactured under this name.”

Specifications

No. 2550 (Dealer, Indiana)—“If it is possible for you to mail us a copy of your three spring issues of ‘Tests on Household and Commercial Air Conditioning Equipment’ we would appreciate receiving it.”

Answer: See below.

No. 2551 (Dealer, North Carolina)—“The early part of this year in one of your issues you gave the rating of a large number of refrigerating machines, and I wonder if you would mail me a copy of this issue.”

Answer: We believe you refer to the specifications issues of ELECTRIC REFRIGERATION NEWS which were published in March and April, 1935. Our stock of these issues has been sold out for some time.

Kerosene Refrigerators

No. 2552 (Dealer, Michigan)—“Can you give me any information on kerosene refrigerators? What company puts them out? Is there a dealer in Chelsea or Jackson, Mich. No gas or electric?”

Answer: Manufacturers of kerosene-operated refrigerators are as follows: Electrolux Refrigerator Sales Division of Servel, Inc., Evansville, Ind.; the Crosley Radio Corp., Arlington St., Cincinnati, Ohio; and the Gibson Electric Refrigerator Corp., Greenville, Mich. Also being manufactured is a gasoline motor-driven refrigerator, made by the Waukesha Motor Co. of Waukesha, Wis.

Service Men's Society

No. 2553 (Manufacturer, Ohio)—“We are interested in obtaining the address of the Refrigeration Service Engineer's Society. If you have the office address of this institution, please refer same to us so that we may get in touch with them.”

Answer: 433 N. Waller Ave., Chicago, Ill.

Dartnell Books

No. 2554 (Dealer, Ohio)—“I have read your article about books advertised in the July 17, 1935 issue, published by Dartnell Corp. Would you please send me this firm's address as I would like to get a certain book?”

Answer: The Dartnell Corp., 4660 Ravenswood Ave., Chicago, Ill.

Refrigerant Controls

No. 2555 (Manufacturer, Connecticut)—“Thank you for your letter in answer to our inquiry regarding capillary tube control. I seem to remember an article which discussed the relative advantages and disadvantages of all types of refrigerant controls used on domestic refrigerators. As I recall it the article was written by a Mr. Riley and appeared in ELECTRIC REFRIGERATION NEWS some time during the last two years.”

“I would appreciate it very much if you could tell me the date of the issue in which this article was published.”

Answer: Frank Riley's article cov-

ering various types of refrigerant controls was published on pages 12 and 13 of the October 25, 1933 issue of ELECTRIC REFRIGERATION NEWS.

Steel Coil Makers

No. 2556 (Service Co., Cuba)—“We are interested in making steel coils for walk-in coolers of ice cream storage and hardening room.”

“We would appreciate information or that you put us in direct contact with a reliable source of supply for tubes and accessories for this kind of work.”

Answer: The following companies manufacture steel coils:

Acme Industries
1700 Cooper St., Jackson, Mich.
Bundy Tubing Co.
10951 Fern Ave., Detroit, Mich.
Rempe Fin Coil Co.
340 N. Sacramento Blvd., Chicago, Ill.
Summerlin Tubing Co.
W. Fourth St., Bridgeport, Pa.

A complete list of all manufacturers of refrigeration equipment, parts, and supplies is published in the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Testing Floats

No. 2557 (Service Man, Michigan)—“I am a reader of your publication and would like to be informed as to the best arrangement for testing floats. I would like to make the best testing apparatus possible.”

Answer: An article (with illustrations) describing a fixture for servicing float and header assemblies and cartridge needles by Joe Askin, chief engineer of Fedders Manufacturing Co., was published on page 9 of the October 30 issue of ELECTRIC REFRIGERATION NEWS.

Further information on servicing of float assemblies is contained in the article by K. M. Newcum in the June 26, 1935 issue of ELECTRIC REFRIGERATION NEWS.

Seals Made of Duprene

No. 2558 (Manufacturer, Wisconsin)—“We understand that a refrigeration compressor seal is being manufactured using a rubber-like substance known as ‘Duprene’ which is being vulcanized to the metal component parts.”

“We would be very pleased if you would advise us whether or not you have any information regarding such a seal and who the manufacturer of this commodity would be.”

Answer: We have received the following letter from the Rubber Chemicals Division, Organic Chemicals Department, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.:

“Refrigerator seals can be made by all rubber manufacturers to whom we supply ‘DuPrene.’ Since we have no restrictions on the manufacture of such products, we rather hesitate to name any one manufacturer.”

“If your reader will contact his regular source of supply for rubber goods and finds that he is unable to secure the proper service from them, we will then feel free to definitely recommend a manufacturer to whom he may apply.”

A. L. Hansen Mfg. Co.
5037 Ravenswood Ave., Chicago

Editor: We understand that in a recent copy of your publication there was someone inquiring as to who manufactured the Kling-Tite Gasket Tacker. If you will inform your inquirer that we are the manufacturer, we will appreciate it.

F. A. MORELAND,
Sales Manager.

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them trained, Mr. Executive

Utilities Engineering Institute's course of training in installing and servicing all types of refrigeration equipment was prepared with the cooperation of leading Engineers and Executives in the industry. We asked . . . “What training do you want your employees to have, to make them most capable and efficient?”

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PURCHASING AGENT now with well known manufacturer wants connection with house offering greater opportunities for advancement. Now buying refrigeration, air conditioning, oil burner and general electrical and machinery equipment. Also familiar with printing and advertising materials. Age 31, married, good basic education and training. Nominal salary. Box 740, Electric Refrigeration News.

MANUFACTURERS, DISTRIBUTORS—Engineer, highly experienced commercial sales and applications of all types, thoroughly capable organizing distributors and dealers wishes connection with manufacturer or live distributor. Also excellent knowledge of air conditioning. Location secondary consideration. At present in charge refrigeration engineering for large well known company but intends making change. References and proof of accomplishment gladly supplied. If you want a man with exceptional experience and who doesn't “bluff” but produces, write Box 742, Electric Refrigeration News.

SALES REPRESENTATIVES WANTED

TO SELL gas-fired humidifier—small compact units used in industrial plants and homes. Controlled by humidistat and capable, when required, of evaporating 2½ gals. of water as vapor steam per hour at a very nominal cost. Installation simple—needs ¾" water and gas line connection and in homes usually some sheet metal duct work. For territory and interesting discount, write Motors Metal Mfg. Co., Detroit, Mich.

FACTORY REPRESENTATIVE WANTED

EASTERN manufacturer of artificial food for use in domestic refrigerators has exceptional opening for Chicago, Pacific Coast and Canada representative. Must be acquainted with distributors and manufacturers and able to invest \$1,000.00 for merchandise. Big field. Proposition should net right man from \$5,000.00 to \$10,000.00. Write in detail about yourself. Box 741, Electric Refrigeration News.

FRANCHISE WANTED

NEW YORK CITY Manufacturers' Agent wants to represent in Metropolitan area reputable and responsible manufacturers of commercial refrigerators, refrigeration and kindred accessories. Have successful sales record twelve years' executive experience that invites investigation. Excellent office facilities. Grand Central district established. Prefer commission arrangement. Interested only in bona fide proposition. Box 737, Electric Refrigeration News.

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